

The **STATE** of the **CIO** '07



BUSINESS TECHNOLOGY LEADERSHIP

GET BUSY ON THAT **SOA**

74%

of CIOs working on SOA are part of the executive committee...and they earn more too!

What Kind of CIO Are You?

INNOVATION AGENT · BUSINESS LEADER · TURNAROUND ARTIST · OPERATIONAL EXPERT

Our **EXCLUSIVE SURVEY** defines **4** CIO archetypes.
Why you need to know where **you** fit in.

WHAT'S WRONG HERE?

The average CIO makes

\$23,562

less in real dollars today
than five years ago

YOU KNEW IT WAS BAD BUT...

CIOs who report to
CFOs, have

1/2

 the budget

of CIOs who
report to CEOs

PLUS WHAT YOU NEED TO KNOW ABOUT

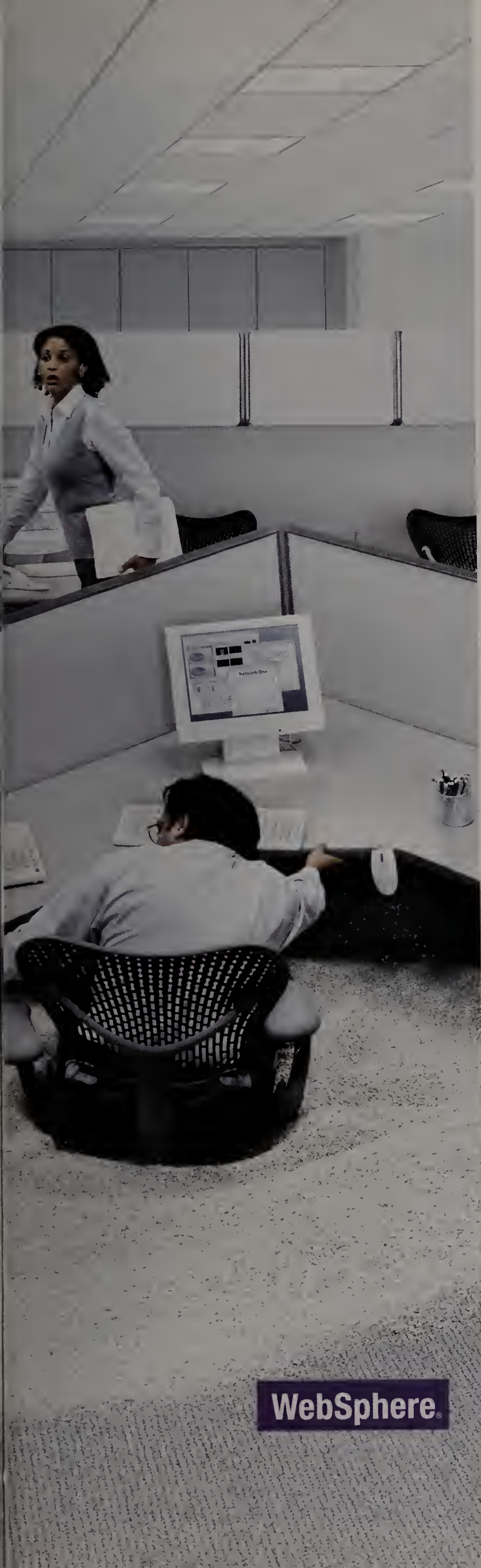
- * Barriers to your success
- * Your technology priorities
- * The highest and lowest paying industries
- * The new emphasis on innovation
- * IT spending by industry
- * How to identify your archetype

AND MUCH, MUCH MORE

Our Special Report begins on Page 62

IBM®





_INFRASTRUCTURE LOG

_DAY 34: This indecision is sinking the business. How do we move to a service oriented architecture? Where do we start? Can we reuse what we have? Can we integrate existing apps like SAP and Oracle?

_Infrastructure quicksand!! We waited too long. I'd throw Gil my tie, but it's a clip-on.

_DAY 37: A lifeline: IBM WebSphere middleware! It's already helped thousands of customers build an SOA. Adapters give us a standardized approach to integrating apps from SAP, Oracle and others. It lets us reuse what we have, saving time and money. And WebSphere even lets us build an SOA at our own pace, so we can deliver new services as needed.

_Oh, great. There's sand in my yogurt.

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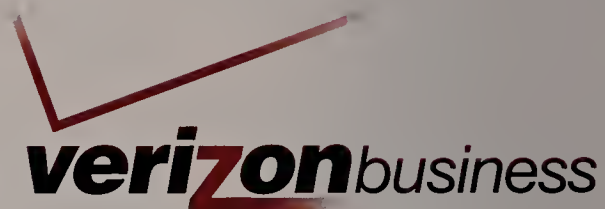
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you see the value that it brings to your business, explore your comfort zone with other managed areas.

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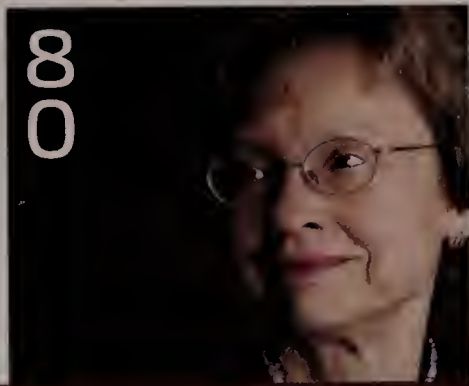
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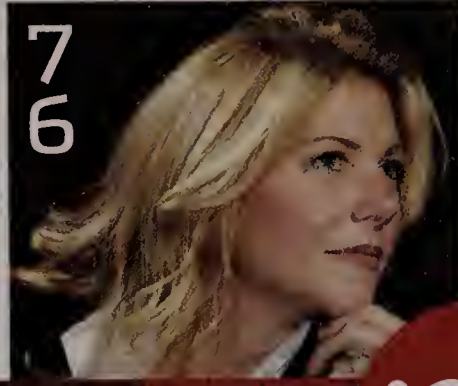
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The STATE of the CIO

'07

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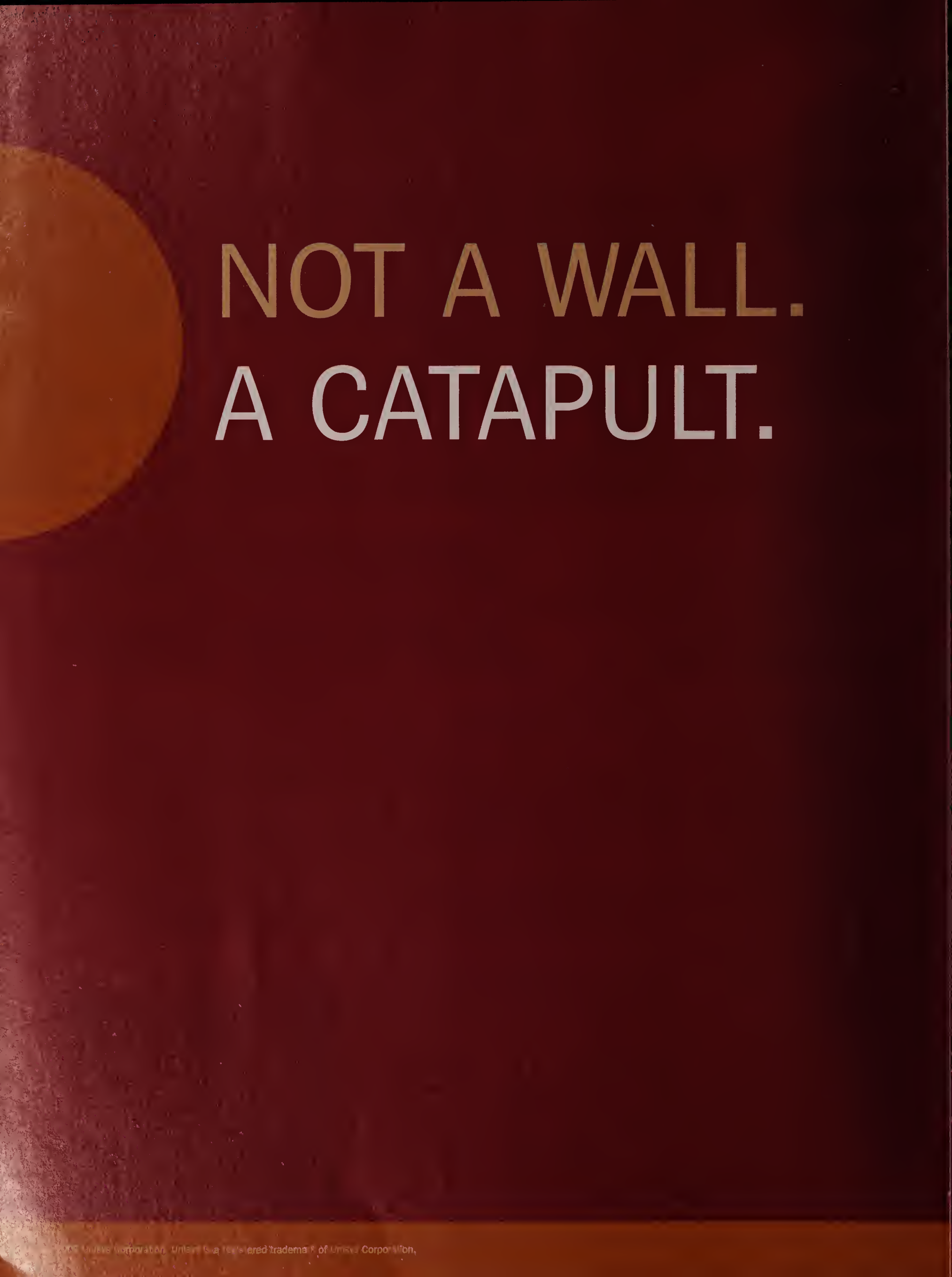
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[THE YEAR AHEAD]

IT Predictions for 2007

The holiday buzz has finally worn off and now it's back to business. The new year will undoubtedly bring new issues and challenges for CIOs. What can you expect in '07? How can you distinguish yourself from the competition? Will IT go green this year? Will Vista overcome adoption obstacles (like inertia, costs and user training)? And what will that mean for Macs? Experts across the IT industry look into their crystal balls to see where IT is headed and what it all means for your business.

» www.cio.com/010107

[THE STATE OF THE CIO]

WE'VE GOT DATA

Don't miss any of our exclusive "State of the CIO" survey data. You can see how you stack up to your peers in terms of salary, budgets, reporting structure and much, much more. Find the complete report online.
www.cio.com/state

[BLOGS]

I.T.-USER DISCONNECT

"The consumer technology universe has evolved to the point where it is a fully functioning alternative IT department."
—Ben Worthen in his blog, *Net Effect*, on the "other" IT department in your company
blogs.cio.com



[BLOGS]

TELL IT LIKE IT IS

He's old. He's cranky. Well, at least he admits it. For Managing Editor David Rosenbaum's take on life and IT, read his new blog, **Cranky Old Guy**. But consider yourself warned.
blogs.cio.com

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now @
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On his way to work,
Brian started to think
about how changing
applications could
dramatically speed
up product design.

Right after that, a
server overheated
and he spent the day
shopping for fans.

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Identity Crisis

If there's one message to come out of this year's "State of the CIO" project, it's this: Play to your strengths

We began this year's "State of the CIO" project with this premise: As the CIO role has matured, it's branched into four distinct archetypes rather than (as once was thought) evolving into a one-size-fits-all model. This is important to understand because in the not-too-distant past there was lots of talk (and research) about what an "ideal" CIO should look like, and CEOs seeking IT leaders chased that ideal. But many of those models were superhero caricatures for super-IT-enabled businesses—a nice fantasy but hardly reflective of reality, either then or now.

The result has been too often a mismatch between what a company *thinks* it wants and what it really needs. CIOs

hired into those situations risk failure—not because they're not good, but because their talents and skills either don't match the real needs of that organization at that time or, frustratingly, because they do, and the business's leaders just don't know it.

The pursuit of a nonexistent CIO ideal has also led to something of an identity crisis among CIOs who, for example, might be brilliant at the operational aspects of IT but are neither innovators nor change agents. How can they live up to an idealized caricature that calls upon them to be both?

That's what prompted us to define our four CIO archetypes: the Business Leader, the Turnaround Artist, the Operational Expert and the Innovation Agent. We felt we could better serve our community, better design our content by a) acknowledging that these different roles exist; b) analyzing their nature; and c) providing CIOs with a more realistic and useful image of who they are and what they can be. This work is meant to represent the reality of our current environment—the State of the CIO in 2007.

But a funny thing happened as we sifted the data. While the archetypes are solid, we discovered that CIOs did not fit neatly into any one camp. Less a portrait of individuals and more a Venn diagram of the CIO role, our data revealed that the archetypes frequently overlapped each other. So as you answer the question posed on our cover, "What Kind of CIO Are You?" you'll likely discover a primary identity along with one or two subordinate ones. (Check out our self-assessment tool on Page 112.)

This issue is the result of five months of hard work by Executive Editor Christopher Koch plus a great team of researchers, writers, editors and designers. Koch led this year's project and spent countless hours poring over the data and figuring out the most useful and interesting ways to present it all to you. We hope you like it.

IT is nothing if not dynamic. And the CIO role continues to evolve even as I type these words. To help you stay on top of not only where things are but where they're going, the CIO Executive Council is developing a model for the Future-State CIO; look for that to be unveiled at the CIO Leadership Conference April 29–May 1 at the Hyatt Huntington Beach Resort in California. The information is at www.cio.com/010107.

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Abbie Lundberg, Editor in Chief
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FROM THE CEO

New Year, Old Lessons

Because those who forget the past are doomed to repeat it



Quite a year, 2006. CIOs deserve to be congratulated because 2006 was a year of great accomplishment and, in some ways, redemption.

After the Internet bubble burst, I think many CIOs felt the disappointed eyes of the business upon them, holding them in some way responsible. And when that was followed by the Enron and WorldCom scandals, and the CEO and CFO came knocking on your door to hold you accountable for implementing the controls to ensure compliance, the strategic value of

your role was, in effect, being called into question.

But a funny thing happened in 2006. CEOs once again began talking about growth and quickly realized that in order for their companies to innovate at the product and service levels, they needed to engage the CIO and get him entrenched in the business details. Yes indeed, it was rather satisfying this year to hear the great stories you told about not only being part of that conversation but leading the charge.

Which brings us to 2007 and a bit of advice: Don't blow it. Even as the credibility that CIOs have earned is at an all-time high, don't forget the recent past. Keep in mind that in order to stay relevant, IT must stay absolutely connected to the business's goals and objectives even as it drives its growth. I know this sounds basic but it's a truth that bears keeping in mind, especially as we enter the brave new Web 2.0 world.

All the talk about SOA, virtualization, search, wireless and so on is fantastic, energizing...and somewhat reminiscent of the Bubble Era. Make sure that at the beginning and end of each and every one of these conversations you remind yourself that these initiatives won't mean a thing unless they help you better serve the customer and the business.

This coming year promises to be a special one for CIOs because the role has never been more important. As technology enables companies to get closer to their customers, as it helps business win the customer's trust and regard, the CIO will get ever more involved in all of the business's various disciplines. So, buckle up and get ready for a great ride. Of course, we at *CIO* very much look forward to joining you on the journey.

And from *CIO* to all of you, have a happy and healthy New Year!

Michael Friedenber, President and CEO
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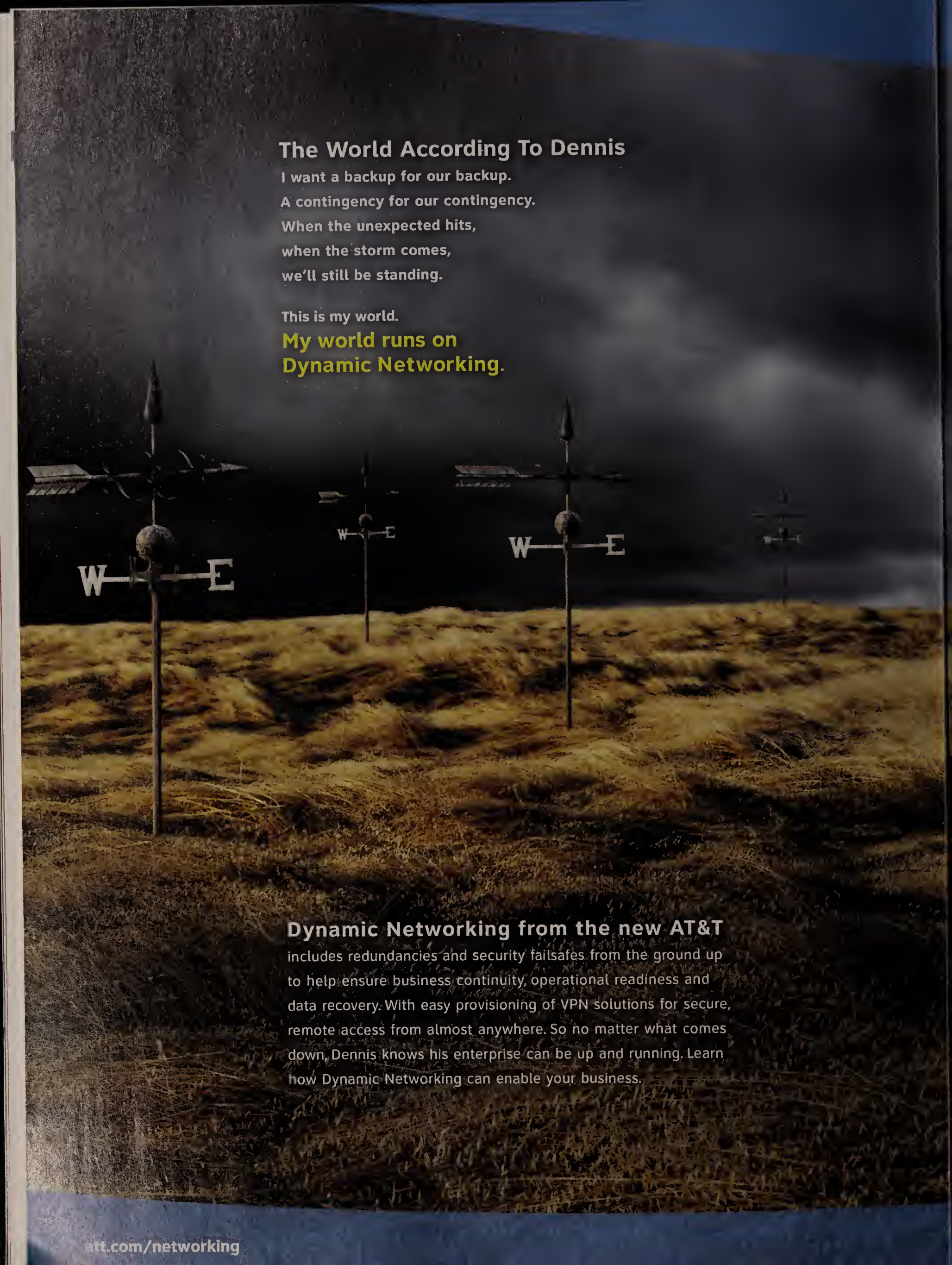
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Your Turf or Mine?

Let's not make this into an IT or business ownership issue ["Whose Business Is Process Improvement Anyway?" Nov. 1]. The situation dictates who leads the charge, but ownership certainly lies with both. In a company where technology plays a dominant role, the CIO/CTO could lead by bringing a portfolio of applications, tools and techniques to the table. In people-intensive industries, business owners could take the lead in proposing and defining processes that then need to be translated into IT solutions by the CIO. The argument that the CIO needs to lead always because IT has a good insight into all business processes is true where companies use complex application and technology portfolios, and IT is doing an excellent job in providing and managing them.

The business knows best (or certainly should know) about which processes exist and which are needed to take the business to the next level. IT knows (should know) best how to automate those processes (or not) so that they flow smoothly and efficiently. In any case, the end result is change. Top leadership needs to drive this down as with any other change management initiative.

In most cases, companies lack the discipline to entrench process-based thinking into all levels of the organization. Most even lack a structured way of describing them. Describing a business process lies somewhere between the extremes of bird's-eye views like those for SOX compliance or grain-level flowcharts used within IT. What we need is a hybrid like the cross-functional, cross-systems one I have developed to develop and implement large and complex systems that use various technologies and flow through various departments and functions.

Both IT and the business need to relinquish some power to make business process management work. Turf battles, if allowed to flourish, will lead to failure.

—PRASHANT SHAH, VNU

BPM and BPI need not be the exclusive domain of companies like GE, Toyota and the like. Most business and IT people in most companies simply think it is not their job to manage a business process.

Developing and managing processes is a joint effort between IT and the business. Both need to relinquish some measure of power to make it work. Turf battles, if allowed to flourish, will definitely lead to failure.

PRASHANT SHAH

Manager Business Applications
VNU Business Publications

I was very excited when I saw the subject of business process improvement ownership on *CIO's* cover. However, the article was a big disappointment. I have worked in IT for 20 years and now work on the "business side" in a planning function where, among other things, we lead business process management methodologies. In my opinion, the article reeked of "Let's build the CIO's empire" rather than providing objective information about the benefits of business process management, what is required for companies to successfully improve their business—including collaboration between business, IT,

finance and other aspects of the organization—and insight on how to approach business process management.

There's enough "turfdom" surrounding IT. Please don't promote more.

MARGO BURNETTE

Executive Director, Bioinformatics Board
Food and Drug Administration

Cash Considerations

Your article ["Digital Subversives," Oct. 15] made some excellent points in regard to "Why fight the end user?" and how to manage such a problem. However, I would have liked to see you mention what counts the most, and that's money.

All communications on a network I support are run through multiple firewalls. The only way around those firewalls is to use proxy servers. All of the proxy servers are managed, and each month a report is generated that defines what type of application was used and what the charge was. So if you used e-mail, you are charged per MB you send and receive. If you used IM then you were charged for each MB of bandwidth used for that and so on. This all adds up.

The wonderful thing about this method is that it does allow end users to use the applications they *need* because if they are being too frivolous with their applications the cost will come back to bite them in the budget.

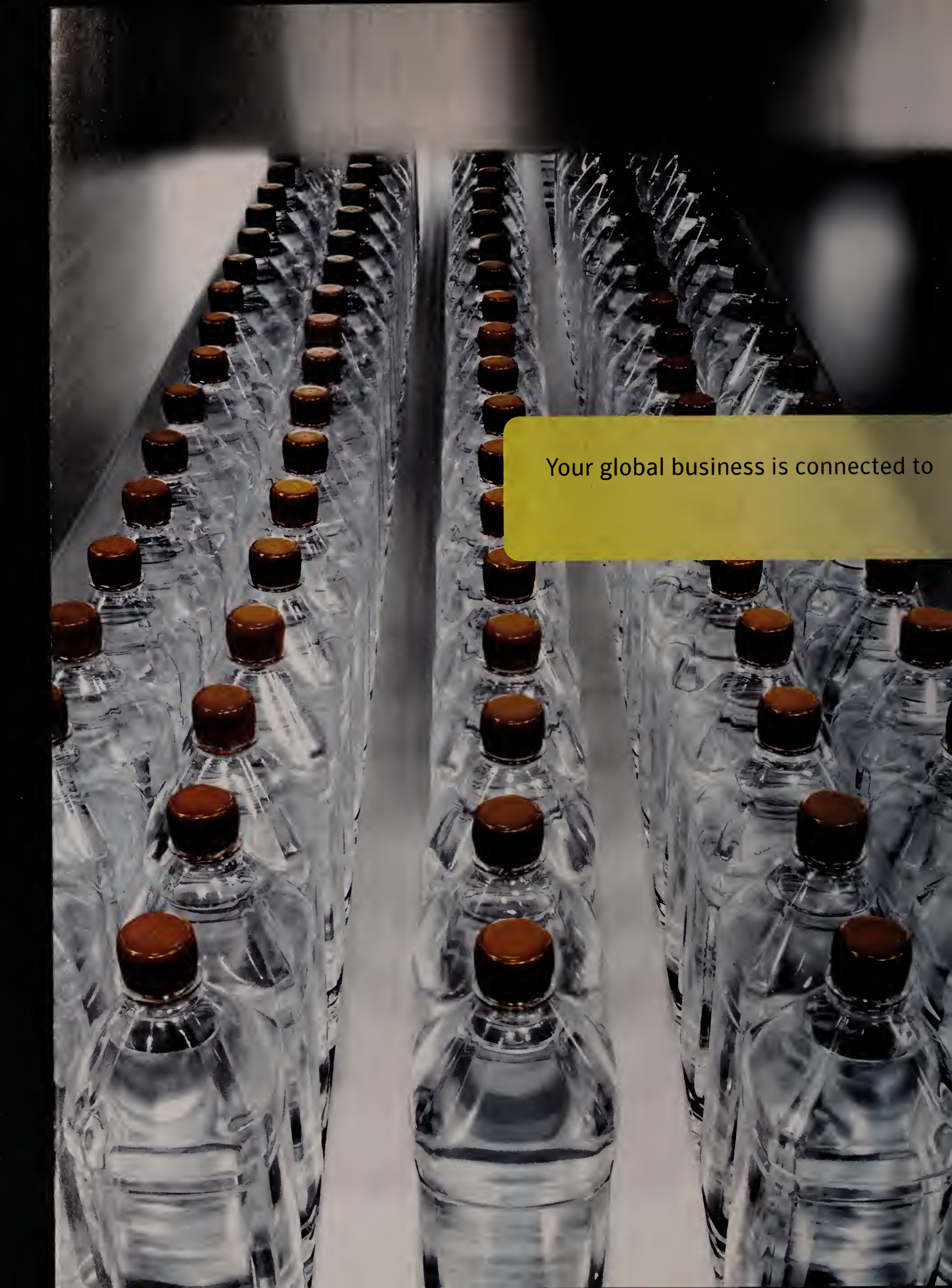
That's the severely oversimplified way of saying it but I think it gets the point across.

JOSHUA M. ANDREWS

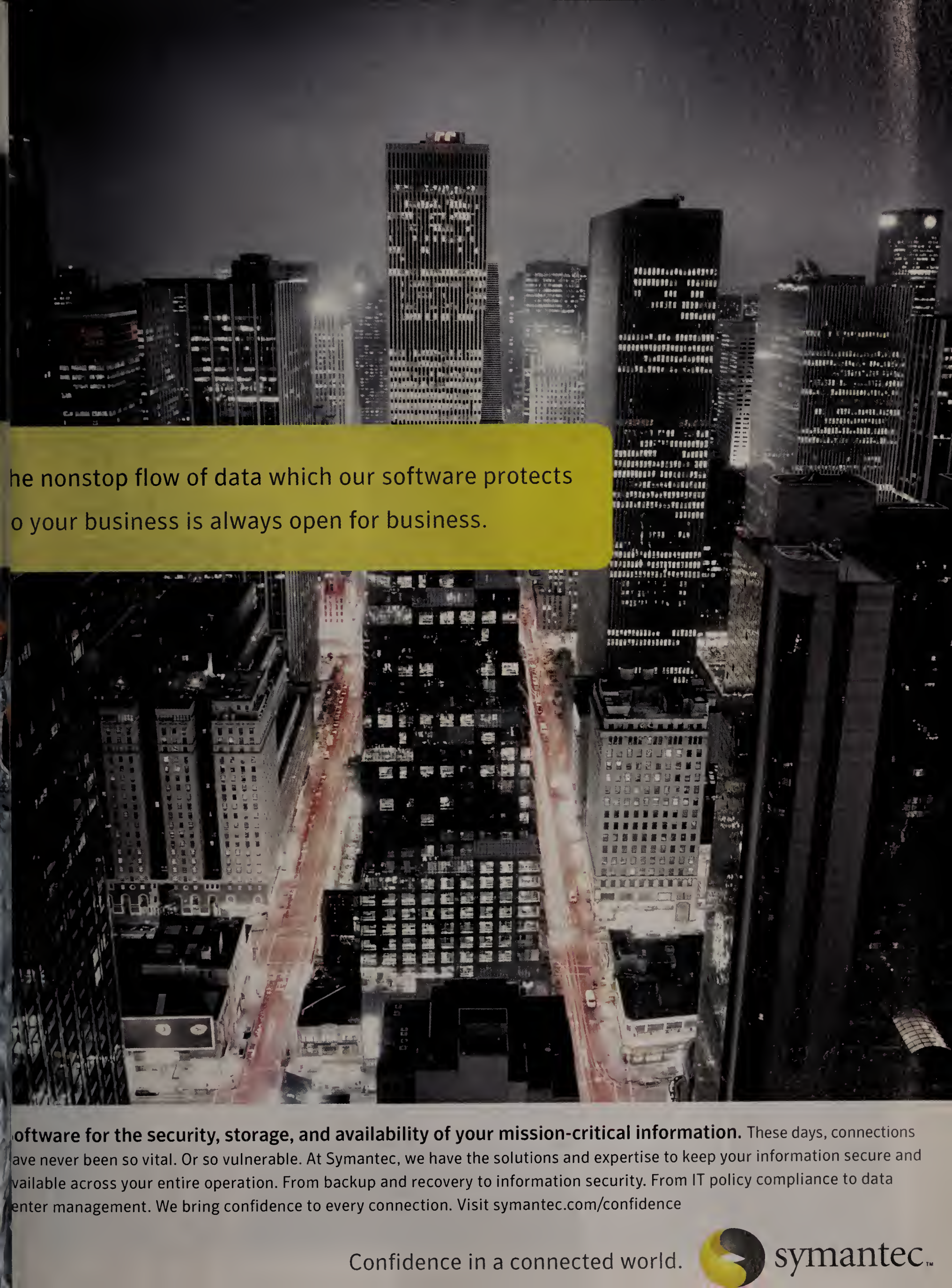
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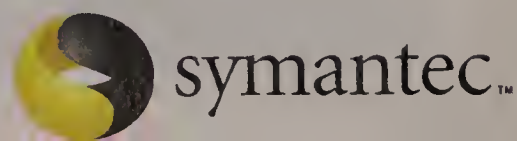
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An aerial, high-angle photograph of a city skyline at night. The image is dark, with city lights providing contrast. A prominent yellow rectangular box is overlaid on the left side of the image, containing text. The background shows a dense cluster of skyscrapers, with one particularly tall, dark building in the center-left.

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trendlines

EDITED BY LAURIANNE McLAUGHLIN

NEW * HOT * UNEXPECTED

The **STATE** of the **CIO** '07

YOU Said It

Here's a taste of the intriguing data that we gleaned from your responses to this year's "State of the CIO" survey. For full coverage, see Page 62.

MOST WANTED I.T. SKILL SET

52%

of CIOs say it's project management, followed by application development (51%), database management (39%), security (37%), and BPM (36%)

OUTSOURCING STABILIZES

The amount of work you're outsourcing stayed roughly the same as last year. The industry with the **highest percentage** of outsourcers/contractors: government; **the lowest**, education

YOUR ROLE IN INNOVATION

89%

of CIOs say innovation is a part or a significant part of your role

WHERE THE SOA EXPERTS ARE

At a time when SOA gurus are in high demand, **technology manufacturing firms** have the highest concentration of CIOs with SOA experience (41%), which is significantly higher than technology manufacturing's representation in the overall average of CIOs (6%)

—Laurianne McLaughlin

CIO RESEARCH

All I Wanted for Xmas Was a **PS3!**

SUPPLY CHAIN It's not quite coal in the stocking, but many kids probably still feel despondent about what happened on Dec. 25. Instead of finding Sony's ultracool PlayStation3 gaming console wrapped up under the tree, they may have found an IOU that said: "One PlayStation3 will be given to Billy once Sony is able to manufacture and ship more to the good ole USA. We promise! Love, Mom and Dad."

Sony's shortage of PS3s, due to reported manufacturing and supply chain problems, proved worse than expected. Early analyst estimates predicted that 400,000 PlayStation3s would be available in North America on the Nov. 17 launch date (which had already been pushed back from early 2006). In fact, American Technology Research estimated that just 125,000 to 175,000 PlayStation3s made it to North American stores for the now infamous launch (with its tales of shopper fights and store burglaries).

Unless parents camped out in front of Best Buy or paid through the nose on eBay for the console, gamers will have to wait for Sony's Computer Entertainment division to catch up with the demand this year. The problems appear to stem from Sony's insistence on a truly next-generation gaming console that integrates new and expensive components.

The delay has frustrated Sony's rabid consumer base and opened a gaping window of opportunity for its two rivals, Microsoft's Xbox 360 and Nintendo's Wii, which also debuted for the holidays.

Lesson learned: Companies such as Sony must understand that launching a new product should involve decision-makers from marketing, product development and supply chain, and there needs to be a process to ensure that all three groups have an equal seat at

Continued on Page 32





World's Thinnest Cell Phone Display

MOBILE Samsung Electronics has developed what it claims is the thinnest LCD (liquid crystal display) pane—just as slim as a credit card—for use in mobile phones. The svelte screen is 0.82 millimeters thick and, combined with a new method for attaching the panel to devices, will allow manufacturers to shave between 1.4 mm and 2.4 mm from the thickness of their phones, Samsung says.

The screens, which offer a resolution of 240x320 pixels, will be available in two sizes—2.1 and 2.2 inch diagonal. Samsung expects to mass-produce them starting in the second half of 2007.

Since the popularity of Motorola's super-thin phones, including the Razr, phone makers are increasingly trying to make skinnier phones. The

Razr flip phone is 13.9 mm thick.

The LCD size reduction comes partly from a new assembly technology developed by Samsung called iLens. Most phone screens use a piece of reinforced plastic that sits a few millimeters above the LCD to protect it. With iLens, Samsung found a way to attach a protective sheet directly onto the display in a way that also improves its shock resistance and readability.

In addition, the technique makes the display easier to read outdoors, because it eliminates the reflection that occurs on the plastic sheet used in existing designs, Samsung says.

Recently Samsung also announced that it will put a 1 GHz StrongArm processor inside a mobile phone next year.

—Nancy Gohring

XMas PS3

Continued from Page 31

the table, says Mark Hillman, a research director with AMR Research. When that's the case, the groups can weigh the additional risks and costs from potential delays when the company has to rely on outside suppliers and unproven technologies. Then, as a unified group, they can make the best decision. Of course, Hillman notes, it all comes down to "who ultimately owns the power in the decisions," and at many product-centric companies like Sony, it's the product development and engineering group.

By all accounts, the PS3 is a slick piece of machinery. It features a first-of-its-kind processor; Blu-ray Disc drive; 60GB hard-disk drive; Wi-Fi adapter; online connectivity; wireless controllers; and more. But that didn't come cheap.

Technology researcher iSuppli estimates that at least for this first batch of products, Sony will lose as much as \$240 on each console sold. That's noteworthy because the PS3 is one of most expensive gaming devices ever made, at \$600 for the high-end version.

The PS3 delays contributed to an unexpected executive shake-up in Sony's Computer Entertainment division in early December, while the company was still grappling with a recent recall of its notebook PC batteries. Jack Tretton, Sony Computer Entertainment of America's newly installed president, assured gamers that the company is "working around the clock" to satisfy the PS3 demand.

They'd better. According to research from the Georgia Institute of Technology and the University of Western Ontario, supply chain missteps such as product or shipment delays in general can create an immediate 9 percent drop in stock price, and over six months, losses can be as much as 20 percent. And in second-quarter 2006 results, Sony reported an operating loss of \$177 million.

—Thomas Wailgum

Data Breaches Cost You More

Data breaches continue to become more expensive: Costs to companies weigh in at a hefty average of \$182 per compromised record. **That's a 30% increase over the 2005 average cost of \$138.** Other notable findings:

Average data breach cost per incident: **\$4.8 million**

Average spending after incident to prevent further breaches: **\$180,000**

SOURCE: Ponemon Institute's "2006 Cost of Data Breach Study"



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Better Keep IT SIMPLE

MANAGEMENT REPORT Simplicity is the key to better IT, according to a recent study by The Hackett Group consultancy.

Even though world-class IT departments spend 7 percent more per end user on IT than their peers, they return more to the bottom line through reduced back-office costs, according to the study. These top-notch IT departments accomplish this in part by reducing architecture complexity.

That a streamlined architecture can improve IT operations isn't a new idea. But Scott Holland, senior director with Hackett, found that this practice, among others that promote good IT governance (such as the use of project management offices and service models such as the Information Technology Infrastructure Library, ITIL), contributes directly to financial performance. In companies with world-class IT departments, back-office functional groups such as finance, human resources and procurement were able to save between \$2.1 million and \$5.5 million for every \$1 billion in revenue. Meanwhile, the cost of operating these functions, as a percent of revenue, is at least 13 percent and as much as 45 percent lower than at other companies.

One key factor: "World-class companies buy enterprise systems at the functional level," notes Holland. While Holland acknowledges that it could be a stretch for a mid-market company to invest in an ERP system, "there's a price to enter."

Hackett defines world-class companies as those that fall within the top quartile of the consultancy's benchmarks for efficiency (based on use of resources) and effectiveness (based on skills and processes).

In its analysis of data from about 200 companies, Hackett found that the best performing IT departments deployed 31 percent fewer applications for every 1,000 end users. They were also much more likely to be operating a single ERP system, especially for financial management.

Simplification of the IT portfolio extends to the technology infrastructure. The top IT shops also use fewer development platforms, fewer databases and operate fewer data centers per 1,000 end users.

—Elana Varon



Ready to Produce IMs in Court?

ARCHIVING Companies that do not keep close tabs on PDAs, instant message conversations and other forms of electronic data may soon be in for a nasty surprise, should they find themselves in court. As of December 1, 2006, new guidelines, called the Federal Rules of Civil Procedure, go into effect. The rules, set by the U.S. Supreme Court, expand the types of electronically stored information that companies could be required to produce in a lawsuit.

That means companies will now be on the hook to retain and produce a broader range of digital data than before. Flash drives, voice-mail systems and instant message archives will all be added to the mix.

According to a recent online survey, executives are ill-prepared for the new rules: In a November study by Deloitte Financial Advisory Services, almost 70 percent of respondents said they require more training on their own corporate record retention policies and procedures (and this in an audience including many CFOs, tax directors, finance directors, attorneys and controllers).

Deloitte says the time is ripe to examine your data retention strategy.

One way that enterprise IT can prevent surprises under the new rules is by more thorough auditing. Take instant messaging: According to a 2006 study by the American Management Association and the ePolicy Institute, more than half of those who use free IM software at work say that their employers have no idea what they're up to.

For most companies, the biggest worries stemming from the use of undisciplined instant messaging will be skyrocketing costs and lost productivity during discovery, says Jeffrey Ritter, cofounder of Waters Edge Consulting, an information management consultancy based in Reston, Va. "The burden facing companies is cost containment," he says.

Companies can get into real trouble when the CIO, general counsel and records manager are not on the same page, Ritter adds. "The most significant challenge for many companies is the lack of a teamed approach to evaluating the risk."

—Robert McMillan



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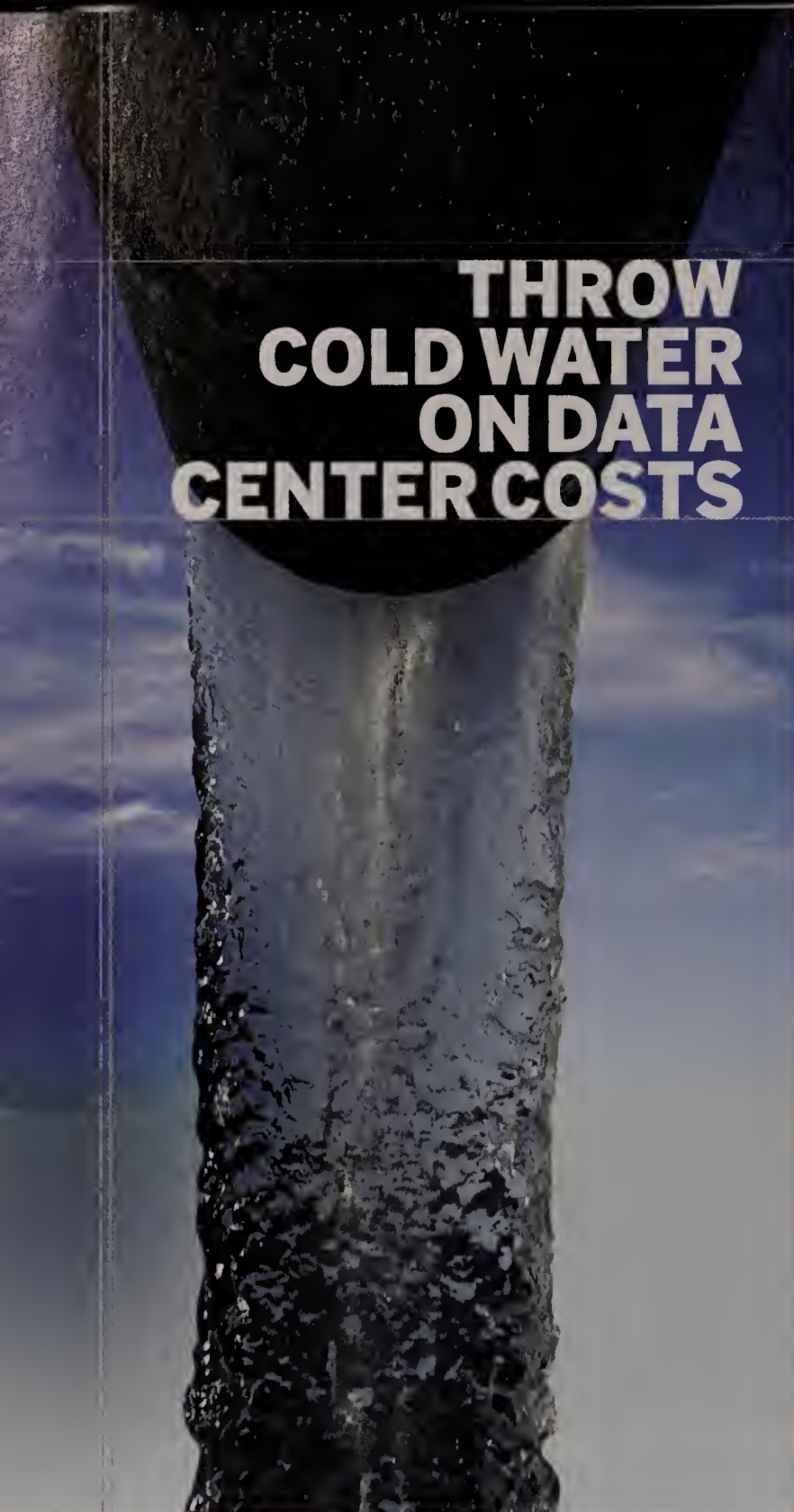
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THROW COLD WATER ON DATA CENTER COSTS

DATA CENTERS IBM will license its technology for cooling servers with water instead of air to Panduit, a global networking and electrical manufacturer, hoping to encourage adoption of IBM energy-saving techniques for data centers.

Panduit will license IBM's Rear Door Heat eXchanger, a 5-inch-deep cooling door that mounts on the back of a conventional server rack. Water courses through the door, cooling the processors in the server hardware. IBM's water-cooled system reduces server heat output in data centers by up to 55 percent, compared to air-cooled technology, says Tom Bradicich, chief technology officer for IBM's BladeCenter and System x server product lines.

The heat exchanger is part of IBM's CoolBlue portfolio of products aimed at slicing data center energy costs.

Data center operators have been slow to embrace the idea: "It's difficult to do water cooling inexpensively," Bradicich says. But in the past 18 months, the number of servers used in data centers "has been getting extremely out of hand," he says. As electricity bills for cooling grow, water-cooled solutions become more viable.

Some CIOs now give water cooling a closer look, though they still have some reservations, says Michael Bell, a Gartner analyst.

Water cooling can be initially more expensive to introduce into a data center than air cooling, and IT managers worry about water systems leaking and causing damage, Bell says. Some CIOs are sticking their toes in the water cautiously—clustering their highest-powered servers into one part of the data center and introducing water-cooled technology only in that area.

As power bills grow, Bell says, water usage will rise.

Hewlett-Packard introduced a water-based cooling system for its high-density servers in January. Also, blade server maker Egenera introduced CoolFrame, which integrates Liebert's X-Treme Density cooling technology into a blade architecture. American Power Conversion also makes data center cooling systems using water.

—Robert Mullins

For Better Collaboration, Try Fantasy

TEAMWORK Want to learn the latest management theory on collaboration? Then log on to an Internet fantasy role-playing game and create your own 3-D avatar.

That's what Jack Emmert, creative director for Cryptic Studios in Los Gatos, Calif., advises. Emmert created the hit game *City of Heroes*, in which thousands of online players dress and arm their 3-D superhero avatar characters to do battle against thugs, robots and monsters. The twist: The best way for

players to advance to the next level is to collaborate to vanquish criminals. Emmert programmed incentives into the game to encourage teamwork and continued subscriptions (at \$14.99 per month).

Executives can use similar incentives, Emmert says, to encourage collaboration at work. His advice:

» **Foster individuality.** In games, if players can express their individuality (by say, choosing special clothing), they also will want to join a group to express the group's

formed identity. In the workplace, give those executives with the most to gain from a successful project the tools to design and personalize the new system. "Let them make it their own," Emmert says.

» **Provide frequent rewards,** and praise groups. Game designers provide some type of reward to players every 90 seconds on average to keep players engaged in the game. In the workplace, provide small rewards frequently (monthly perhaps) that not only keep workers engaged

in a project but also reward group behavior.

» **Make rewards personal.** In online games, if a reward is clearly relevant to the character, players will play longer. Give rewards that reflect an employee's personal tastes or lifestyle.

"People don't like to be told to be in a group," Emmert says. "You have to create the incentives and rewards that will make it their decision that working in a group works to their advantage."

—Allan Holmes



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CIO'S THOUGHT LEADERSHIP SERIES

Note: CIO Publisher **Gary Beach** recently sat down to discuss top business and IT issues with five noted leaders: **Gregor Bailar**, CIO/VP, Capital One Financial; **Carole Cotter**, CIO/SVP, LifeSpan; **Lynn Vogel**, CIO, M.D. Anderson Cancer Center, University of Texas; **Todd Lunsford**, CIO, Quicken Loans; and **Karen Lay-Brew**, VP Licensing, Pricing and Operations, Microsoft Corp. Over the course of an afternoon, these five leaders shared insights into three strategic business/IT issues: The Business Value of IT, Infrastructure Security and Management, and Innovation. The dialogues were recorded for a forthcoming series of webcasts and CIO inserts. Following is an excerpted transcript from the Innovation dialogue.

Gary Beach: The topic du jour when you're talking with senior IT and CIOs these days, Carol, seems to be creating growth and enabling innovation. We have some data at the magazine that suggests about 50 percent of CIOs right now say this is the focus of their initiatives. But in two years – 18 months to two years, to be exact – nearly 80 percent are saying that their job, the focus of IT, will be to create growth and enable innovation. Would you agree with that data?

Carole Cotter: Yes. And I think innovation needs to be placed in the context of the overall mission and goals of the organization. And innovation, then, is very creative ways, maybe differentiating ways, of achieving the business goals and managing the change that comes with innovation.

Karen Lay-Brew: How can we not innovate? Human beings are born with curiosity, and that doesn't stop when you walk into work. I've worked in stable industries – mining, manufacturing – and now I'm in the software industry, where it's extremely innovative. So my observation is there are different challenges in terms of getting people to be more creative. Where I am today it's slightly different in terms of trying to put a little bit more discipline and structure.

But innovation is absolutely key, no matter what industry you are in. It also comes back to how you define innovation. Do you think about innovation as creating penicillin out of thin air or do you think about innovation as incremental continuous improvement in what we do? And how do you celebrate that whole range of innovation?

Lynn Vogel: Carole's point is exactly on target in terms of the connection between the business processes and the strategy of the organization. I think that in health care in particular, as evidenced by a number of recent reports, we have a ways to go in our business



processes, having them be as safe and as careful and high quality as they can be. But there's another sort of undercurrent of innovation that's happening, and that is that the very science of medicine itself is changing. When you read the newspapers, you would think that the sequencing of the human genome was the

end point. In fact, it is only the starting point. And with the innovations that we are seeing now, whether you'd call them evidence-based medicine or personalized medicine, understanding one's genomic structure really is going to have a lot to do with diagnosis, with

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treatment. So the IT side of this is how to bring these pieces together. We still have a business to run. Yet, on the other hand, the very underpinning of that business – that is how we diagnose and treat patients – is changing in very fundamental ways.

Beach: Todd, I'd like to get your comments on Carole's thought of innovation being the horse and growth being the cart. Would you agree?

Todd Lunsford: Yeah, and I especially liked her comment in regards to defining innovation and of these wide gaps evolving the business – or is it small incremental steps? For us, it is definitely small incremental steps, and it's a really interesting thing to witness, to take a snapshot of your business year to year or every two years, and look back at the hundreds of changes that have been made to a business process and not even realize them many times day to day or month to month. Taking a look back at where you were a year ago and then trying to project where you'll be a year from now – it's pretty fun.

Beach: *CIO Magazine* recently did a survey that said there are components, if you will, to innovation: reducing costs, automating business practices, driving revenue, and creating new products and services. What does the face of innovation look like at Capital One?

Gregor Bailer: There are a couple of things that it could manifest itself in. One is that "I could have done that" statement. You see something and it's just so obvious, it's so right, and you say to yourself, "You know, I could have done that." And those might be the ones that lower costs, might be the ones that improve operations, might be the ones that are the continuous improvement types or not the penicillins. In the penicillin example your competition is truly afraid, and you have rocked the ship in such a way that you've maybe shifted the paradigm again. For us, we're trying to do both. It also is from where you start. If you haven't got your costs in line, boy, you better start with innovation in that space. If, on the other hand, you're trying to shake up the financial services industry and become the maverick, you better have some pretty big penicillin tricks up your sleeve. So we're trying to do that as well.

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Words to the Wise



CAREER When you talk, do people listen? Since much of the CIO role now involves communicating with a variety of audiences, an advanced, nuanced vocabulary can help you get ahead. Current and aspiring CIOs need to use words effectively to influence other executives, sell strategies to board members and relate to IT staff.

Here are a few tips on how to

increase your word power and communicate more effectively:

» **Learn how to learn words.**

Read more, from a wider variety of sources. Look up unfamiliar words and use mnemonic devices to help you remember them. "When you see a new word, connect it to something you know," says Renee Mazer, creator of "Not Too Scary Vocabulary," a CD aimed at helping teens and

adults improve their vocabulary skills. Take the word *draconian*. It looks like Dracula.

» **Think about how you use language generally, not just individual words.** Steve Heckler, a Los Angeles-based executive coach and IT consultant, says he encourages IT executives who make presentations to "think it out, which sometimes means writing it out, and speaking it out loud so

you have a sense of, 'How does it sound to me? Is it credible, is it accurate, is it complete?'"

» **Know your audience.**

Choose words that everyone you are addressing will understand and, more importantly, respond to. "Tell them what they need to know using the most concise words," says Shelly Carlson, manager of Powerful Speech, a Chicago-based executive coaching firm. "Are you talking to the sales staff or fellow engineers?" The most successful executives, she says, do two things well in every meeting: "They know exactly what they want that specific group to do when they leave the meeting, and they inspire them to do it." —Sara Shay

When Your Boss Used to Be CIO

ON THE MOVE As the CIO role becomes a stepping-stone to other executive positions, more CIOs will find themselves reporting to bosses who've run IT at least once in their career. This can be a dream or a nightmare, according to two CIOs currently in this position.

Raymond Dury, who joined Fifth Third Bancorp as its CIO in November 2006, reports to the COO, **Greg Carmichael**. Carmichael held Dury's post before being promoted to COO last July. Dury says one of the benefits of reporting to Carmichael is that they have more productive discussions because they don't have to focus so much on technology. Because Carmichael knows IT, the two can instead strategize and brainstorm ways to fulfill business requests more quickly and efficiently.

The challenge for Dury: He can't hide anything. If a project milestone is missed or a system doesn't work as expected, Carmichael will know. Dury points out that this is not a bad thing. It just means that he has to play at the top of his game. "In order for me to excel, I have to be better than normal because he can differentiate average from great delivery," says Dury.

Richard Escue faces a slightly different situation at RehabCare Group. The CIO reports to the CFO, **Jay Shreiner**, who, while a finance guy at heart, once served as Kellogg's CIO. Escue, who joined Rehab-

Care in October 2006, says Schreiner's CIO experience makes the oft-stressful CIO-CFO reporting relationship easier.

"Because he's been in the shoes of an IT leader, he knows we have lots of customers to serve and that we have to

serve the operations side first and foremost, not the finance back office," says Escue.

Escue adds that when he interviewed for the job, he looked for signs that might indicate whether Shreiner was a micromanager. "To be a CIO working for someone who used to be a CIO and who by their nature is a micromanager would be terrible," he says. But Escue says his experience has been "nothing but positive."

—Meridith Levinson



Richard Escue
CIO



Jay Shreiner
CFO

CIO.COM Read Meridith Levinson's **MOVERS AND SHAKERS** blog for the latest moves. Find it at blogs.cio.com.

INFORMATION SECURITY IN THE 21ST CENTURY

THE NEXT GENERATION OF INFORMATION SECURITY PROFESSIONALS

INSIDE:

**The Rise of the CISO/CSO and
What it Takes to Become One**

**Management Concentration Creates
Opportunities for Information
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**Supporting Young People for the
Future of Information Security**



THE RISE OF THE CISO/CSO AND WHAT IT TAKES TO BECOME ONE

The ease of use, global connectivity and speed with which information can be accessed and transactions processed via the Internet are all components of the Internet value proposition. With these advances in connectivity and convenience also come new threats to ensuring data privacy, integrity and protection.

Information security professionals tasked with protecting those assets have become increasingly more visible within the organization. Over the past few years, information security professionals have begun joining the C-suite in record numbers and gaining a seat at company board meetings.

It's been said that "good management is good security," which suggests that those organizations that seek to continuously improve their information security are recognizing the role of the Chief Information Security Officer (CISO) or Chief Security Officer (CSO) in developing and implementing an effective information security policy based on corporate objectives, management issues and the impact of security policy on business functions.

The rise of the CISO/CSO has been steadily increasing over the past decade and will continue to gain momentum over the next decade as more executives realize that ensuring smooth operation of vital business processes adds to the company's bottom line. The focus of the CISO/CSO is shifting from strictly technical positions to a broad range of management activities, which means that technical expertise now must be interwoven with business skills. The CISO/CSO should have a firm grasp of the organization's strategic objectives, management issues, the impact of security policy on business functions, and be able to manage the program across the enterprise.

The ability to not only manage an organization's information security but clearly and effectively communicate risk and viable solutions to management has become critical for the CISO/CSO. According to the 2006 (ISC)² Global Information Security Workforce Study (GISWS), conducted by global analyst firm IDC on behalf of the International Information Systems Security Certification Consortium [(ISC)²], information security as a business priority has moved up the management hierarchy, with more respondents identifying the board of directors and CEO, or a CISO/CSO, as being accountable for their company's information security.

The majority of respondents in the 2006 survey – 71 percent – of the more than 4,000 high-level information security professionals responding, expected their influence with executives and the board of directors to increase, as dialogue between corporate executives and information security professionals has evolved from a technical discussion to one of risk management strategies, with a focus on the human factors affecting security of the infrastructure.

"Professionals worldwide indicated in the study that information security is now being perceived as a business enabler rather than a business expense," said Pat Myers, CISSP-ISSMP, chairperson, (ISC)² board of directors. "The increased protection of intellectual property, employee data and company records has become a top priority, due to external regulations and compliance legislation such as Sarbanes-Oxley, and that has led to the growing influence of the CISO/CSO among senior management."

A recent study conducted by the Information Security Forum (ISF), a not-for-profit association of leading organizations dedicated to clarifying and resolving key issues in information security, was designed to describe the evolution of the role of the CISO/CSO. The study involved conducting workshops in partnership with (ISC)² between May 2005 and February 2006 in five major cities throughout the world with current and

aspiring CISOs/CSOs. The study found there is no clearly defined career development path for becoming a CISO/CSO. However, the study determined that there are certain characteristics that a "good" CISO/CSO must possess a(n):

- Demonstration of leadership and decision-making ability
- Sensitivity to an organization's risk appetite
- Good understanding of business principles
- Willingness to take responsibility
- Good understanding of the organization
- Ability to deal with fundamentals first
- Understanding of business language
- Ability to talk business risk
- Ability to align security strategy with business strategy

In addition to their normal management duties, CISOs must be versed in the art of negotiation, interpretation and become an agent of change. These abilities are not taught in traditional information security courses or programs. Those who aspire to become a "good" CISO need to pursue these skills through either continuing education programs or mentoring programs or a combination of both.

Participants in the ISF study who have reached the CISO/CSO position come from a wide variety of professional backgrounds. Internal Auditor, Information Technology, Operations and Military are common starting points, and experience in an IT function is considered important in order to make informed decisions about information risk in an information technology setting. The study participants also agreed that a combination of technical expertise and business judgment are required to be an effective leader.

Those aspiring to the CISO/CSO position should also consider the value of obtaining certifications from a professional security association to help further their career progression. According to the 2006 GISWS, 85 percent of respondents involved in the hiring process view certifications as either somewhat or very important when making hiring decisions.

(ISC)² offers vendor-neutral certifications based on internationally-recognized information security principles known as the (ISC)² CBK®. The globally recognized CISSP® (Certified Information Systems Security Professional) certification from (ISC)² is a management-level credential that provides an objective measure of knowledge, skills, abilities and experience.

(ISC)² also offers credentials in advanced areas of concentration. The Information Systems Security Management Professional (ISSMP) designation reflects a deeper management emphasis and understanding built on the broad-based knowledge of the CISSP-ISSMP CBK®, a taxonomy of information security topics. The CISSP-ISSMP offers an assurance that the credential holder possesses the integrity, leadership and skills necessary to develop, implement and manage a program across all levels of the organization.

Information security professionals are being integrated into the highest levels of executive management as organizations realize that a separate department with responsibility for security issues, managed by a CISO/CSO who provides a "top-down" strategic approach that balances business risks and controls, is necessary to develop and implement an effective information security program.

For more information on (ISC)² credentialing programs, please visit www.isc2.org/CISSP.

MANAGEMENT CONCENTRATION CREATES OPPORTUNITIES FOR INFORMATION SECURITY PROFESSIONALS



According to the annual (ISC)²® Global Information Security Workforce Study (GISWS), conducted by global analyst firm IDC and sponsored by (ISC)², the information security field offers job growth that exceeds growth in information technology. According to the 2006 study, which surveyed over 4,000 information security professionals and hiring managers worldwide, the number of information security professionals is expected to grow at nearly twice the expected growth of the number of employees globally.

Driven by compliance regulations and the desire to maximize global commerce opportunities, protecting information assets has become one of the most important functions within any organization, public or private, in countries around the world.

As organizations seek to find qualified individuals to perform the critical task of securing their information infrastructure, the importance of certification, which provides a baseline of knowledge, skills and abilities, continues to increase. According to the 2006 GISWS, 85% of hiring managers believe that information security certifications are either somewhat or very important when making hiring decisions. (ISC)² is the leader in professionalizing the information security workforce as the standard to assess the competency and knowledge of information security professionals has become increasingly more critical.

(ISC)² has certified more than 45,000 professionals in more than 120 countries and continues to keep pace with the ever-changing demands and complexities of the information security environment worldwide. As the security industry matures and the field expands, employers are increasingly in search of qualified individuals who possess the knowledge, skills, abilities and experience required to develop policies and procedures that mitigate today's risks and anticipate tomorrow's. To meet this demand, (ISC)² developed a management concentration to the Certified Information Systems Security Professional (CISSP®), the Information Systems Security Management Professional (ISSMP®) for the advanced information security manager.

The CISSP-ISSMP reflects a deeper management emphasis and understanding built on the broad-based knowledge of the CISSP-ISSMP®, a taxonomy of information security topics, and offers career advancement that spans a broad range of information security management positions including information security, assurance and

risk management professionals who focus on enterprise-wide risk management.

Christopher Nowell, CISSP-ISSMP, ISSAP, is the Director of IT Services for Pillar Systems, Incorporated. He serves as the enterprise architect in charge of directing and developing corporate information systems and security policies, as well as provides support for multiple security and technology initiatives within many of the company's key customers in both the public and private sectors.

"My ISSMP concentration has helped my career by serving as an effective quality differentiator. Potential employers and customers know that with a CISSP-ISSMP, they are getting an exceptionally qualified and determined leader in the field of information security management."

"My customers and clients are fully aware of my certifications. For much of my work, these certifications are a matter of contractual requirement. I know that the ISSMP concentration certainly did create opportunities for me that otherwise would not have been so readily available. I encourage every CISSP out there to sit for the ISSMP concentration if they desire to be a leader in today's information security workforce."



Christopher Nowell,
CISSP-ISSMP, ISSAP

The ISSMP concentration is one of many of (ISC)²'s efforts to ensure that information security personnel are knowledgeable, experienced professionals throughout every phase of their careers. (ISC)²'s continuing mission is to professionalize the information security workforce through education and certification.

For more information about the CISSP-ISSMP concentration, please visit www.isc2.org/ISSMP.

The CISSP-ISSMP concentration verifies knowledge, skills and abilities in the following areas:

- Expert understanding of relationships between security and business requirements of organizations
- Intimate understanding of risks and threats applicable in an organization's environment, including applications, software languages, databases and operating platforms, and countermeasures to mitigate these risks
- Crucial knowledge to address control and coordination of operational networks and systems, including availability and integrity of systems, system processes and job executions
- Proficiency in business impact analysis, enterprise recovery strategy, emergency planning, implementing and advocating business continuity plans
- Ability to identify appropriate and applicable laws related to risk management, understanding of investigation parameters and deep understanding of professional ethics in order to conduct investigations in a credible and effective manner

SUPPORTING YOUNG PEOPLE FOR THE FUTURE OF INFORMATION SECURITY



For 18 years, (ISC)²[®] has been at the forefront in educating and certifying information security professionals worldwide. During that time, the consortium has also played a critical role in supporting academia in developing the professional of the future. In fact, Idaho State University was one of the first seven sponsoring organizations of (ISC)².

(ISC)²'s contribution to education began with the distribution of guides to the official (ISC)² CBK[®], a continuously updated taxonomy of information security best practices developed and maintained by (ISC)², for use in the classroom by textbook publishers such as Auerbach. Elements of the CBK have also been adopted by the U.S. federal government and included in the National Institute of Standards & Technology (NIST) and Committee on National Security Systems (CNSS) standards.

The CNSS standards were the key to establishing the U.S. National Security Agency's Centers of Academic Excellence in Information Assurance (CAEIA) -- four-year colleges and graduate-level universities that pass a rigorous review demonstrating their commitment to academic distinction in information security education. The mission of CAEIA institutions is to reduce vulnerability in the U.S. information infrastructure by promoting higher education in information security, and to increase the number of professionals with expertise in various information assurance disciplines.

(ISC)² has also been an early and active supporter of The Colloquium for Information Systems Security Education (CISSE), established in 1996 by academic, industry and government leaders, that has become the leading proponent for implementing courses of instruction in information security on a worldwide basis.

(ISC)² also continues to broaden its outreach to students pursuing a career in information security through its annual Information Security Scholarship Program. Established in 2004, the program awards full-time post-graduate research students funds for information security research projects.

The scholarships are for one year and are awarded to qualified, full-time post-graduate students who are pursuing an advanced degree in information security at any regionally accredited university worldwide. The scholarship recipients are the emerging leaders in the information security field, and the scholarship program recognizes and supports their groundbreaking contributions.

The scholarship program is just one component of (ISC)²'s Academic Program, which offers academic institutions worldwide opportunities to enhance information security education for their students via scholarships, instructor-led (ISC)² Review Seminars, certification exams, academic credit for (ISC)² certification holders, eLearning, and professional experience credit for (ISC)² certification candidates from accredited academic institutions.

(ISC)² is in the process of developing a recommended academic international program of study with CISSE and an endorsed set of curriculum modules based on the (ISC)² CISSP[®] and SSCP[®] CBK that would be available for use by academic institutions around the globe to enhance current information technology and information security degree programs.

For those who have chosen the information security profession as their career goal but lack the professional experience required for full

According to the 2006 Global Information Security Workforce Study conducted by global analyst firm IDC and sponsored by (ISC)², the number of security professionals worldwide is expected to increase from 1.5 million in 2006 to nearly 2.1 million by 2010.

Many academic institutions are taking this trend seriously by developing programs to meet the demand for highly qualified professionals. To support not only the academic community but also government and industry, the Informatics Research Institute at Idaho State University maintains a broad repository of information assurance training and education materials for public use as part of its NIATEC (National Information Assurance Training and Education Center) activities with (ISC)² and as a CAIEA.

Many states have recognized the importance of the field. A significant example is a recent commitment by the Texas Emerging Technology Fund of up to \$3.5 million to the University of Texas at San Antonio as part of an \$11 million package from other public and private sources to recruit top information security talent. Already a Center of Academic Excellence in Information Assurance, the university's objective is to become the premier information security research and education institution in the country, attracting the best and brightest students to be the information security leaders of tomorrow in industry and government.

(ISC)² applauds Idaho State University and the University of Texas at San Antonio for their ambitious and timely programs.

For more information on the National Security Agency's Center of Academic Excellence in Information Assurance, please visit <http://www.nsa.gov/ia/academia/caeiae.cfm>.

For more information on the National Information Assurance Training and Education Center, please visit <http://niatec.info>.

For more information on the The Colloquium for Information Systems Security Education, please visit <http://www.cisse.info>.

certification, (ISC)² offers an Associate of (ISC)² status -- a designation for individuals who aspire to be information security professionals who possess the knowledge, skills, abilities and EXPERIENCE to become full credentialed members of (ISC)². This status is available to those who have gained knowledge related to the domains of the (ISC)² CBK through qualified academic courses and believe they would pass either the CISSP or SSCP examinations. Associates of (ISC)² must subscribe to the (ISC)² Code of Ethics and maintain their status in good standing with (ISC)². After passing one of the (ISC)² examinations, they have five years and two years respectively to acquire the necessary work experience to qualify for full CISSP or SSCP certification.

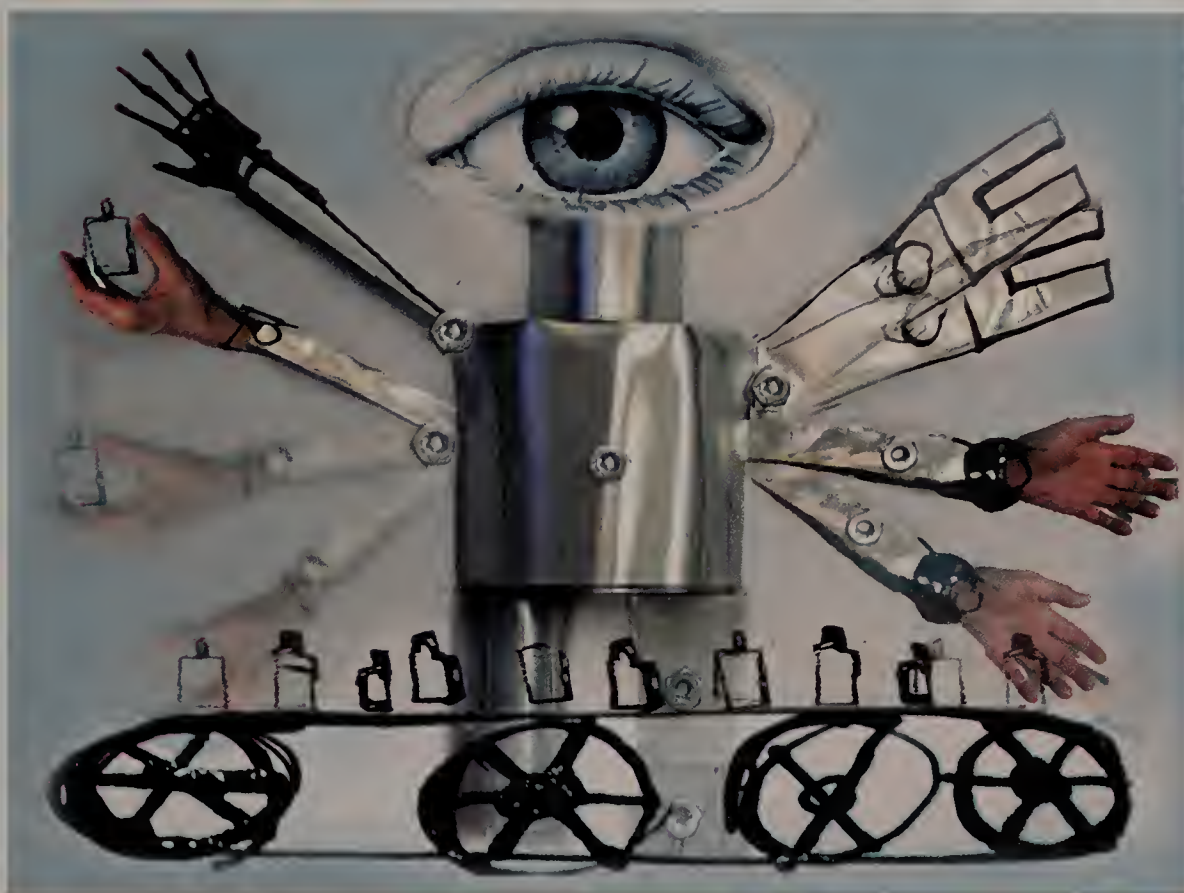
(ISC)² firmly believes that a solid academic foundation is an important building block in the formation of a well-rounded information security professional.

For more information about the Associate of (ISC)², please visit www.isc2.org/associate.

ESSENTIAL technology

FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS

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Factories of the Future

BY FRED HAPGOOD

MANUFACTURING | When a new idea about manufacturing arises, a new crowd of players jumps into the game and manufacturing's technology rules change dramatically. In the first third of the 20th century, the philosophy of continuous flow and assembly line technology gave American industry an edge over the European industrial powers. In the last third of the 20th century, U.S. manufacturers got caught off guard by the rise of "lean manufacturing" and the war on waste.

Perhaps the next time one of these turning points appears, the U.S. manufacturing sector will leapfrog its competitors and make up ground lost over the past few decades. That next turning point may be the emerging trend of adaptive manufacturing, manufacturing that morphs on the fly as companies respond to chaotic economic changes.

Consider this scenario: Sooner or later, the central banks of Asia—China, Japan, Hong Kong and Korea—will make the value of the U.S. dollar fall because they stop buying the currency or, worse, start selling.

This shift would be bad news for U.S. industries associated with imports, but export businesses—making or managing physical goods, not services—would fare better. They'd need new, 21st-century manufacturing infrastructure, dominated by informa-

Machines that "see" parts on assembly lines, 3-D printers that prototype products in hours—let's take a look at adaptive manufacturing

tion processes and information management issues. A U.S. manufacturing revival would be managed by CIOs.

Already, today, manufacturing is becoming more about moving bits than atoms. Companies seeking greater manufacturing efficiency and greater competitive opportunity have much to gain from emerging technologies in adaptive manufacturing such as 3-D printing and sensor networks.

What's Behind Adaptive Manufacturing?

Several factors are driving interest in adaptive manufacturing and the rising importance of information management in manufacturing, as outlined by Eric

An increasing number of economists see markets as essentially chaotic: complex, nonlinear and as unpredictable as the weather.

Beinhocker in his recent book, *The Origin of Wealth*. One is an ongoing, if quiet, revolution in the way economists think about markets and economies. For most of the past century, markets were viewed as quasi-mechanical processes that ground their way to equilibrium, defined as the point at which supply and demand balance. Today, an increasing number of economists see markets as essentially chaotic: complex, nonlinear and as unpredictable as the weather.

Under the old theory, the job of managers was to tune the mission of the company to the equilibrium points. That was called defining a sustainable competitive advantage. The new theory abolishes that

responsibility, since it is the essence of a chaotic economy that competitive advantages can vanish almost overnight.

The new idea: As a tool in business, managers should use natural selection—a law of nature that enables species to grow and progress in a landscape as chaotic as any economy. That means defining a portfolio of experiments appropriate to the available competencies of the organization, running these against the market, shifting resources according to outcomes,

then exposing a new set of experiments to the market and so on.

Natural selection is not new to capitalism: Channeling investment into successful ventures is evolution at work. Many companies put out products and services with slight variations, like different flavors or colors, and shift resources to the variations that sell better. But adaptivity is much harder to achieve in industries that move physical goods. By their nature, such companies are wedded to long production runs

On-Demand Collaboration

“Competency rallying”—where companies come together to make up for manufacturing capability gaps and win a specific piece of business—is already working in Europe. Since 1996, one transnational manufacturing culture has utilized the concept, in a community set on Lake Clarence (also called the Bodensee) in the center of Europe, embracing parts of Germany, Switzerland and Austria. Dubbed the “Virtuelle Fabrik,” the system involves precision machining and specialty manufacturing firms, whose clients might be a carmaker that wants a special steering wheel or a cell phone maker that wants a button.

The Virtuelle Fabrik provides a system for connecting market needs with the skills of all the participating firms (or at least a subset of the firms, depending on the project). When a customer approaches firm A with a concept, that firm can circulate the idea around the entire group. Firm A organizes the response from the point of view of getting a satisfactory product into the hands of the customer at a good price and in a short time.

According to Kevin Crowston of Syracuse University, who recently wrote a report on the Virtuelle Fabrik with Bernhard Katzy of the University of the Federal Armed Forces, Munich, the Fabrik was organized by using small teams to develop the basic rules of participation. Unnecessary duplications, like inspections each time a part crossed a firm’s boundary, were identified and rooted out. Each guideline was voted on by all the project partners.

The result: More products flow more rapidly through the entire Fabrik. The increased product flow rate enhances the development of competencies within the Fabrik partners, effectively stretching the skill sets. Since firms know they can find partners for most of the functions in the productive cycle, some have been able to become super-specialists, raising the value of their services.

Katzy and Crowston point out that the future of such associations across the globe depends in part on whether CIOs can provide the tools needed to build trust and community across cultures.

A possible example of such a tool might be video walls—immersive videoconferencing in two or more offices in different parts of the world, left on continuously, so people could build relationships by chatting.

Recently, four other regions in Switzerland and Germany have organized manufacturing networks on the model of the Virtuelle Fabrik, Crowston reports.

—F.H.

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and long-term design commitments (for example, Detroit's bet on the SUV). They tend to have highly centralized, bureaucratic, risk-averse managements.

To do adaptive manufacturing, a company has to be able to crank out a mix of products that is in constant flux.

Getting there requires not only a new set of tools but also a new management structure and philosophy. Fortunately, CIOs, with their hands-on grounding in information management issues, are not strangers to the challenges of change management.

Assembly Machines That See

What kinds of technology will enable an adaptive manufacturing environment? Machine vision is an important example of the sort of technology that is converting manufacturing into an information-based process. Machine vision does not mean recording or registering a raw image, as a camera would, but recognizing the actual objects in an image and assigning properties to those objects—understanding what they mean. Vision in this sense makes every aspect of manufacturing—inventory, transport, tooling and assembly operations—much more efficient.

If a manipulator (like a paint gun) can recognize and adjust to the orientations and positions of parts in a bin or on a line, you do not need to pay for the design, construction and management of structures to hold those parts in fixed, stable positions. If a machine can recognize a part visually, you don't need to pay for affixing an RFID or stamping a bar code on every item.

A seeing machine can inspect not only the items flowing through it but also the objects and processes in its environment, potentially lowering the costs of maintenance and quality control.

This might sound fantastical, but machine vision is a real industry. The consultancy Vision Systems International pegs the total value of the North American market at around \$1.5 billion. At present, the technology is used mostly for inspections, especially in the semiconductor and electronics industries, but improvements are

coming rapidly. One of the newest applications is "servo vision": controlling the interaction of a tool like a paint gun with a line of continuously moving, swaying objects.

Vision represents the simplest way of programming the assembly of different sets of parts into many small runs of different product designs. Ed Roney, manager of the Robot Vision Group for Fanuc Robotics, based in Japan, points out that robots already use vision to assemble kits—to collect one list of items from a group of part bins, package them into kit A, then collect another list of items for kit B and so on.

The Chicago Museum of Science and Industry uses Fanuc robots with machine vision to let museum-goers design their own toy (a top), which the robots then build while they watch. As for using machine vision to build integrated products, Roney says vision and robots are used to build cell phones now, and robots are used in the assembly of many products, including pens and cars.

Prototyping in Hours, Not Weeks

In another example of a technology enabling adaptive manufacturing, desktop manufacturing, or 3-D printing (3DP), rapidly speeds up prototyping. This fam-

If a paint gun can recognize and adjust to the orientations and positions of parts in a bin or on a line, you don't need to pay for the design, construction and management of structures to hold those parts in fixed positions.

ily of technologies makes it possible to produce a physical implementation of a 3-D CAD/CAM file in a few hours at most.

How does it work? A representative technique might be depositing a layer of powder on a flat surface and then spray-

By late **2006**, the machine-vision market in North America had an estimated value of **\$1.46B to \$1.48B**.

SOURCE: Vision Systems Design

ing that layer with a liquid that binds the powder in a pattern defined by taking a slice of a CAD file. (Flour and water are enough to demonstrate the concept.) The printer moves through the stack of the layers or slices, laying down one on top of another. When enough layers have been deposited, you pick the object up, shake off the excess powder, and there you have

your doohickey in glorious 3-D. Physical properties like color, strength and so on are controlled by using different powders, binders and "infiltrants" (chemicals that soak into the matrix).

Right now this industry is focused on

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—David Foster, Communication Systems Group Leader, CERN

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Part of the 12,000 ton CMS particle detector at CERN, Geneva, Switzerland.

making demonstration items (since most clients understand 3-D physical models better than blueprints). But 3DP is already playing a role in short-run manufacturing.

Typically, the first step in making a metal part is to make the tools required to make the part. (Sometimes you have to make the tools to make the tools to make

3-D printing is already playing a role in short-run manufacturing. For prototyping, this technology lets you produce a physical implementation of a 3-D CAD/CAM file in a few hours.

the part.) Designing and fabricating these special tools is not cheap and takes time, but that's what you have to do if you need many thousands of copies.

For a smaller run, like a hundred or so, you can use 3DP to make the desired number of molds, then cast the parts in the molds instead of machining them. (As the chemistry of the process gets smarter, it will probably become possible to use 3DP to print metal parts directly, using metal powders.)

Tim Dodge, chief engineer at Dent Manufacturing, a specialty hardware shop, uses a 3DP from Z Corp. in just this way. Dodge says that a representative part of Dent's market is made up of architects and interior designers interested in designing custom hardware (like door knobs) for a specific project. In the old days, these orders required special tooling. Today, Dodge says the 3DP machine has sped up turnaround on such orders from weeks and even months to days.

More on Machine Vision

Go to the online version of this story at www.cio.com/010107 for a link to the AMERICAN ASSOCIATION FOR ARTIFICIAL INTELLIGENCE'S VISION PAGE.

cio.com

Smart Sensor Networks

Both machine vision and 3DP sit inside the realm of ambitious new manufacturing technologies: high-resolution sensor and actuator networks. Sensors (accelerometers, thermometers and machine vision sensors) register changes in the environment; actuators (switches, motors, valves

and 3-D printers) introduce changes. Any kind of manufacturing is composed entirely of these two functions.

The more actuators, the more points of control; the more sensors, the more focused and intelligent that control becomes. Network these devices, and you can exert that control from anywhere. Until recently, this last step required pulling wires through the factory floor, but wireless technology has improved, and CIOs will be more and more intimately involved with the deployment and organization of such wireless sensor networks.

The immense increase in flexibility allowed by technologies like sensor networks and 3DP makes it possible to incorporate new constituencies—managers, clients, business partners—more deeply in the manufacturing process. Making these collaborations work securely will also be the job of the CIO.

New World Collaboration

Adaptive manufacturing promises one other interesting challenge for CIOs: competency rallying. In the old days, manufacturing managers could take aim at a niche and either train their personnel to the skills or make appropriate long-term hires. The central argument of adaptive manufac-

turing is that we live in a world in which niches come and go quickly and unpredictably, and in that world companies can no longer count on having the time to grow the skill sets they might need.

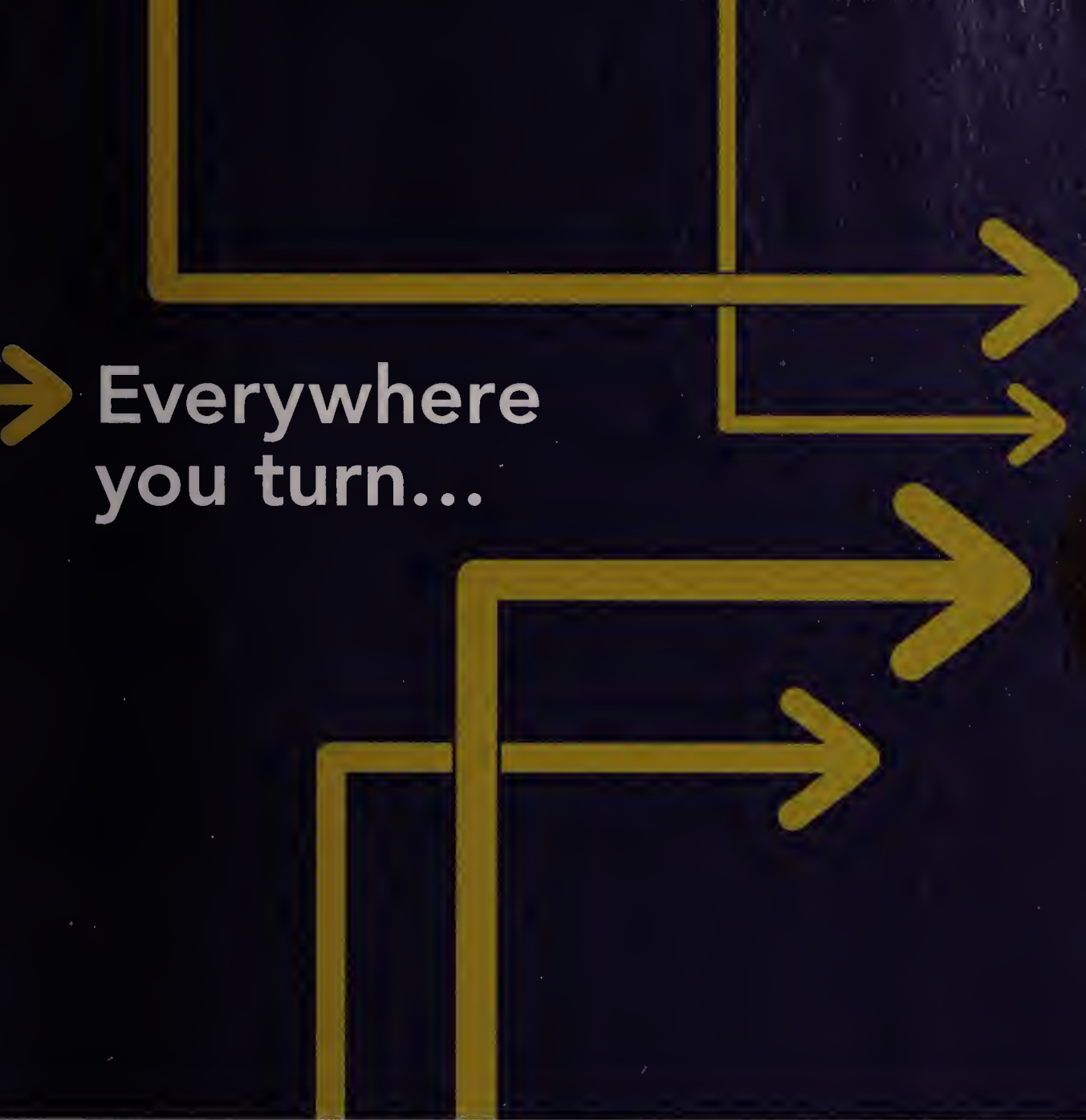
The alternative is to develop a new and counterintuitive kind of collaboration, building short-term partnerships with companies that have the desired skills—even if those companies are, in other contexts, competitors. Conversely, you might “rent out” your company's core competencies to colleagues and competitors. (That's not an entirely new idea: For example, Caterpillar sells capacity on its logistics and distribution network to other companies.)

In this scenario, if you have only three of the five skills needed to attack a given opportunity, you do not need to pass: You can mobilize the other two from other industry participants. Kevin Crowston, professor of information studies at Syracuse University, says that what he calls “competency rallying” depends on high levels of information transparency and a tightly integrated culture.

In parts of Europe, some specialty manufacturing companies are already making it work. (See “On-Demand Collaboration,” Page 44.) Crowston thinks that CIOs will be challenged to find ways to use technology to develop operating cultures that feel regional but are physically global.

When might U.S. CIOs face the adaptive manufacturing challenge on a large scale? This clock is not powered by technology issues but by economic incentives. Right now, the dollar is strong, and in that context it pays to import manufactured goods rather than make them. When the value of the dollar goes down, the U.S. manufacturing game will change. In the meantime, adaptive manufacturing technologies like 3-D printing and sensor networks have plenty of appeal for tactical problems of efficiency. **cio**

Fred Hapgood is a Boston-area freelance writer. He can be reached at hapgood@pobox.com. To comment on this article, go to the online version at www.cio.com/010106.



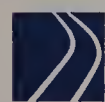
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Pricing for Value

Businesspeople don't value IT because they can't match the price they're paying to the services they're getting. Chargeback clarifies the value of IT services—and raises the stature of the IT organization.

If IT is to be perceived as valuable, it has to have a price. Usage-based chargeback is the best way to build a price-to-value relationship for IT services, and it is one of the cornerstones for running IT as a business within a business. As long as IT has a solid understanding of its operating costs, it can use pricing as a strategic tool for improving alignment with the business by giving executives better understanding and control over IT resources. Different models, with different classes of service, can be used to drive more cost-efficient consumption of IT and to achieve more effective matching of service to business need. Four basic methods for pricing IT value are described below.

Subscription Pricing

The simplest chargeback model, subscription pricing is a pay-per-use model in which pricing is per unit of time, which is much easier to monitor and measure than consumption-based pricing. The operational cost of the IT facilities is calculated and amortized across a subscription period (for example, one year) and then divided between all the users of the service. Depending on the operating profitability goals applied to the IT organization by the business as a whole, an element of gross margin may be added—perhaps to create a pool to fund IT research or future projects.

Advantages

- Simple: If, for example, five lines of business were subscribing to a service that cost \$60,000 per month to provide, the subscription charge (assuming a break-even business model) would be $\$60,000/5 = \$12,000$ per business unit per month.



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Disadvantages

- No usage monitoring or penalties: It assumes all parts of the business will use the service at the same level on a constant basis, with no penalties for excessive consumption or peak time usage.
- No cost justification: There aren't metrics by which the actual level of consumption can be measured, calculated and justified to skeptical consumers.

Peak-Level Pricing

The peak-level approach takes the subscription model and adds a mechanism to monitor and record peak consumption. Consumers are billed according to their peak use, not according to their average use.

Advantages

- Simple to meter: Only peak-level usage needs to be monitored and recorded.
- Clear cost justification: Easy to show when consumers are using more than the base level resources.

Disadvantages

- Penalizes variability: If there are just a few peaks of usage during a given period, the scheme can seem unfair. But shortening the analysis period—say from six months down to one—and the measurement intervals—from weekly to daily, for example—can solve the problem.

User-Based Pricing

If user management is a bigger cost issue for IT than hardware usage, it makes more sense to meter IT by the person rather than the machine. If users are connected to their computers for fairly similar periods of time and have relatively well-understood transactional profiles—for example, bank customer service representatives who work on Web portals—this can be a fair and easy way to charge for usage.

Advantages

- Easy to implement: Tracking the authentication of individual users to IT services is relatively simple, especially if a single sign-on system is in place.
- Clear cost justification: The authentication records provide the basis for cost justification.

Disadvantages

- Ignores system load: If users make heavy demands on systems when they log on, this model shortchanges IT.

Ticket-Based Pricing

In IT environments where quality of service is critical, IT can meter and control usage very tightly using electronic “tickets” that use a short validity period (say four hours).

Advantages

- Consumption regulation: Ticket-based pricing lets IT control system load to a fine degree, helping to eliminate usage

The goal is to deliver IT services in ways that present the highest degree of perceived benefit to consumers—just like in the real business world.

peaks and ensure business continuity.

- Simple: All that is required to monitor ticket pricing is a low-latency (i.e., fast-responding) portal, most probably constructed as a Web service. Tickets provide permission to use the IT service multiple times during the ticket validity interval (a “multiple right of re-entry” solution).
- Strongest cost justification: Of all the models, ticket based pricing is the most powerful in terms of cost justification.
- Pinpoint monitoring: Tickets can be very specific, allowing both sides to monitor exact usage down to the specific application level.

Disadvantages

- Ticket hoarding: For the ticket-based model to operate effectively, it's often necessary to implement “use-by” dates on tickets to avoid stockpiling.

First Class or Coach?

There are other, more complex models for chargeback that bring even more depth to the monitoring and costs. But these four models provide a start. And they can be made more meaningful by layering a system of service levels (and varying costs per unit of service) on top of each model, similar to the airline fare class-pricing model. For example, network access could be offered under the ticket-based chargeback model at

three price levels, each with varying degrees of bandwidth, service level guarantees and peak usage guarantees.

The goal in any of these chargeback scenarios

is to deliver IT services in ways that present the highest degree of visible perceived benefit to consumers—just like in the real business world. CIOs, meanwhile get the opportunity to manage their own cost structures, away from the prying eyes of consumers.

Chargeback is a way to put IT services in terms that businesspeople understand and value. When IT is bought and consumed like other services, IT can become a business within the business. And that is the path to true IT value. **CIO**

Chargeback Controversy

For more on the **BENEFITS—AND PITFALLS—OF CHARGEBACK**, go to www.cio.com/010107.

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Mark J. Denne (mark.j.denne@accenture.com) is a partner with Accenture. To comment on this article go to the online version at www.cio.com/010107.





CFO & CIO

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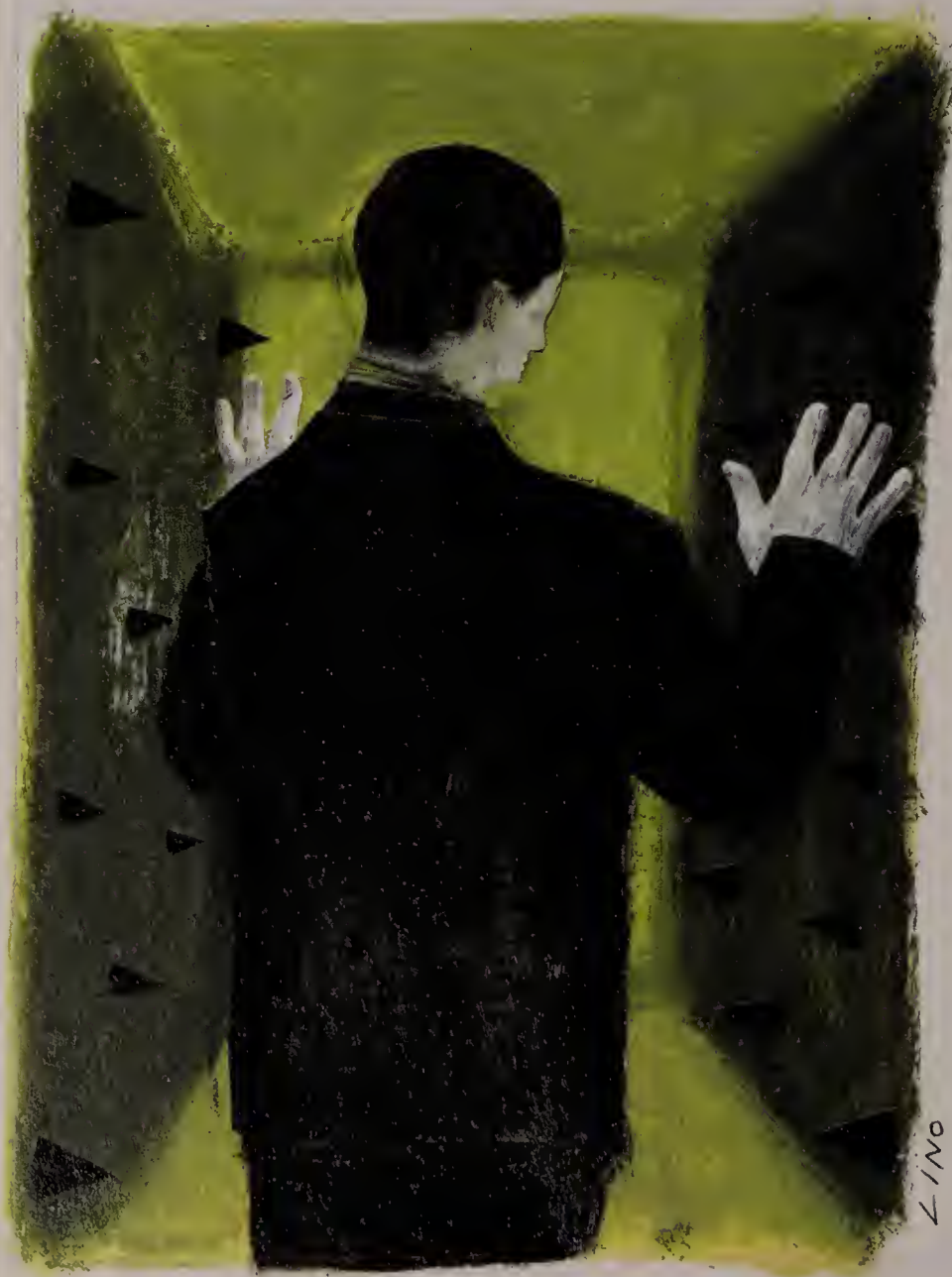
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Leadership Under the Influence

Inexperience, old habits and fear can lead to unnecessary risk taking by the CIO. Avoid this trap by following these simple rules for safe and effective IT leadership.



IT leadership is never easy, but some people make it harder than it has to be. This point was brought home to me after I witnessed a recent car accident. As if driving isn't dangerous enough, a young man used speed to navigate a turn and ended up hitting another car. Clearly in the wrong, he became belligerent and tried to blame the other driver. Unfortunately for him, the other driver was a firefighter with close ties to the local police. Once the police arrived at the scene, they conducted a field sobriety test and arrested the young man for driving under the influence.

Clearly, the decision to drink and drive led the young man to a series of bad choices. IT leadership has its own versions of DUI that can result in near misses, accidents and fatalities. These events are often dissected in the trade press and discussed at conferences by CIOs who, even as they say, "How could they be so stupid?" are also thinking, "There but for the grace of God go I."

Sadly, I see IT leaders take unnecessary risks all the time. Many are leading under the undue influence of inexperience, hubris, fear, old habits, technology hype, vendor pressure and organizational politics. It's ironic that as a profession, we have enough collective experience to identify behaviors that ensure the success of our organizations and our careers. However, these rules are rarely written down so that IT organizations and those who lead them can align their behaviors accordingly.

To help you do so, let us review some of my favorite rules for safe and effective IT leadership.

Build and lead a strong, credible IT organization. Don't be the leader who has 22 direct reports and no viable succes-

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sors. Spend half of your strategic planning effort to get the right people in the right roles working together the right way. Select people with integrity who can work with others, are motivated more by making a difference than making a name, are your professional peers and who complement your capabilities. Organize IT similarly to the business. Expect more from your staff and delegate freely, but check carefully and be there to make sure their failures aren't fatal. Never fire for mistakes but for the inability to learn from experience.

Foster good relationships. Don't manage from within IT. Spend some time learning the business by observing those in customer service. Connect with stakeholders regularly. Don't worry about what you are going to say; focus on what you are going to ask to understand their goals, motivations and concerns. Don't just be present, be omnipresent with business partners.

Forge a shared IT vision, strategy and tactical objectives. Don't wait for the business to supply a strategy; work with the business and derive it together in an ongoing and collaborative manner, weighing all the implications. Do your homework to understand the business processes and data that drive your organization and the technology that could enable strategic change in your business. Finally, define business and IT decision rights so governance processes work.

Deliver on time, on budget. Don't attempt innovation using waterfall project development approaches that have big budgets and long time frames; plan projects for nine months and cancel at 12 months. Don't overload your organization with too many projects; define a top limit for project spending based on what your business can afford.

Develop quality solutions. Don't let project managers "roll their own" when it comes to project management, development methods, technologies, compliance and continuity. Credibility is earned in dimes but spent in dollars. Introducing process disciplines and standardization will require significant withdrawals from your credibility bank, so set your aspirations and approaches accordingly.

Realize business value from IT investments. Don't think you're delivering value because you have a prioritization process based on strategic fit and financial contributions. Use operational value measurements (cycle time, sales calls) that are measured during and after the project, and hold business partners accountable for demonstrating value realization.

Leaders need to help other leaders practice responsible IT. The best way to do this? Define safe IT leadership rules collaboratively with the IT leadership team, and hold individuals accountable for supporting the behaviors and helping others do the same.

In the same way that good friends take the keys from those who are drinking, colleagues must hold each other accountable for demonstrating responsible IT leadership in spite of the negative influences surrounding them.

Reader Q&A

Q: I agree with your rules for IT leadership but want to know about strategies or methods for implementing them. What steps would you recommend I take?

A: The first step for implementing the safe IT leadership rules is to consider the effort as a change initiative. As such, make sure that you have some team members (in and out of IT) who can help you assess your current positioning, set priorities and plan a road map that makes sense for your company's maturity level.

Once you have your objectives identified, define success carefully, both in terms of measurements and a clear vision of the end state. The next step is to craft a story that will resonate with the needs of those who need to change.

In terms of hitting the ground running, make sure that you connect the desired behavioral changes to business initiatives and objectives that have momentum. For example, a new acquisition could focus attention on architecture and integration.

Q: In your column you talk about helping staff learn from their mistakes. Can you provide suggestions for turning a mistake into a "teaching moment"?

A: The best mistakes are ones that are just large enough to make an impression but small enough to contain the damage. The best way to encourage learning is through effective delegation.

A client of mine illustrates the importance of delegation by asking the following question during job interviews: "If one of your direct reports was insistent on trying an approach you knew would fail, what would you do?" Of course, the answer is to let him try his

approach in a manner that limits the risk to himself or the company.

Once an issue occurs, make sure that people learn

Have a Leadership Question?

For more reader **QUESTIONS** and answers from **SUSAN CRAMM**, go online to www.cio.com/leadership.

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from their experiences. Do this by asking, "How are we going to make sure this never happens again?" Make sure that you follow up to see that the root cause analysis is performed and the remediation plan is implemented. **CIO**

Susan Cramm is founder and president of Valuedance, an executive coaching firm in San Clemente, Calif. You can e-mail feedback to susan@valuedance.com.



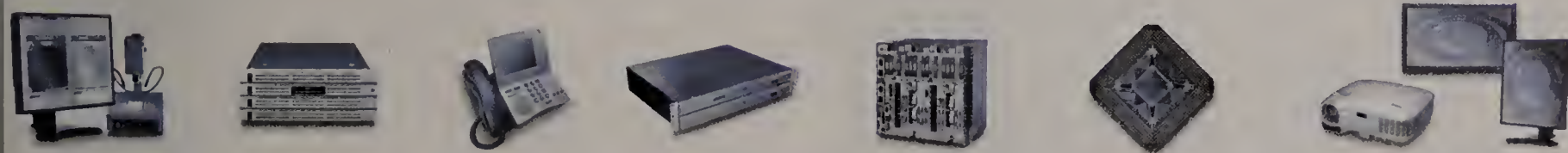


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Green Is Beautiful

Helping the planet doesn't have to hurt your bottom line. Environmentally responsible IT can improve efficiency and generate new revenue streams.



Whether your business thrives or dies in the coming decade may depend on how well it manages environmental issues. In a world of high-priced oil, tightening greenhouse gas emission controls and dwindling natural resources, no company can afford to ignore the environment as an element of business strategy.

Research into companies that are leaders in environmental management shows that information technology is critical to making green initiatives pay off. Thus, furniture maker Herman Miller has constructed a database to rank the environmental attributes of every component in its products and is moving to eliminate highly polluting inputs. Everyone from megalithic Wal-Mart to tiny Rohner Textil (which makes fabric) is testing the power of data to drive financial and environmental results. Meanwhile, a handful of other leading companies have saved millions of dollars and created new revenue streams by bringing IT to bear on their environmental challenges.

GE, for example, has deployed its digital cockpit, a \$10 million system that supplies metrics on environmental performance, resource use, safety and compliance. With it, the company's violations of wastewater emission regulations fell by more than 80 percent in the past decade, and GE saved tens of millions of dollars through environmental, safety and productivity improvements.

GE achieved these results by using information to uncover better ways to do routine things, and by demanding that the changes pay for themselves. Now GE has a platform for its "ecomagination" marketing campaign and for its push to provide environmental goods and services, such as high-efficiency jet engines and turbines and water transport systems.

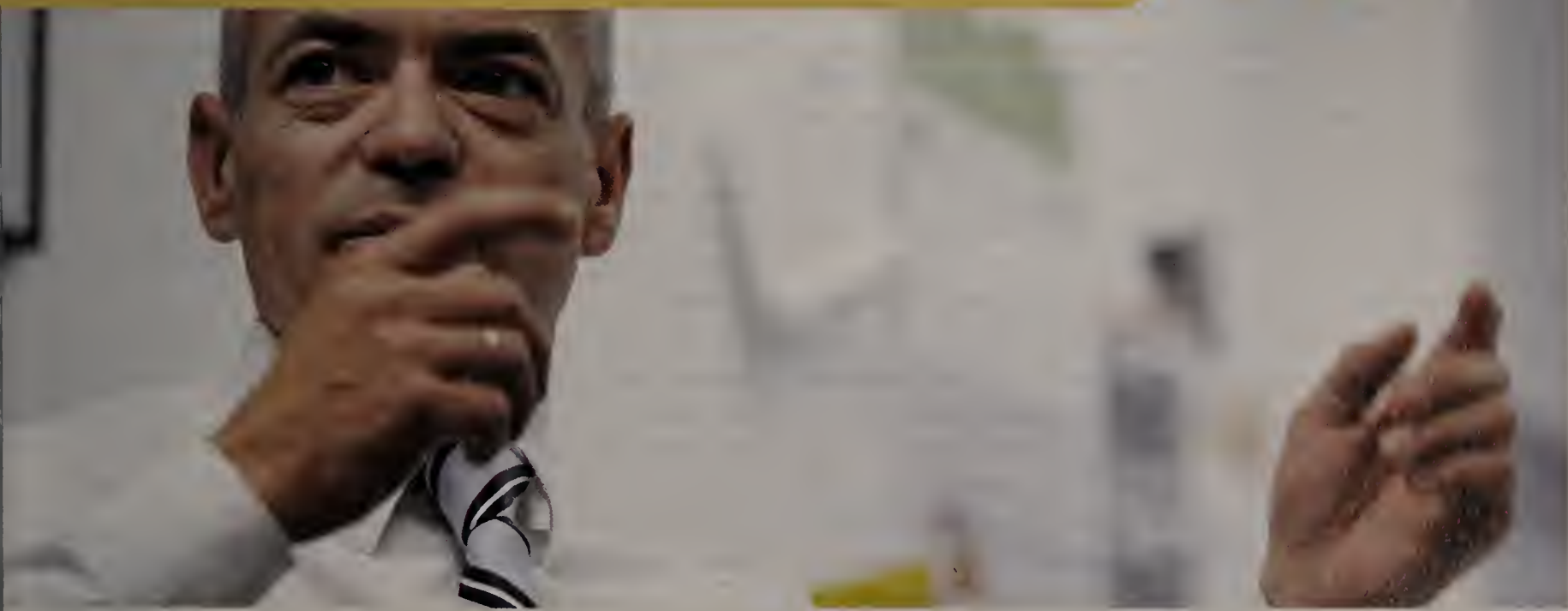
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Information technology's power to collect, analyze and extract information will have market-changing effects. Marrying information-age tools such as data mining and advanced modeling techniques to environmental challenges holds potential to propel some companies ahead of their competitors because they can "see" through data where their industry is headed.

Curbing energy consumption is the low-hanging fruit for every company going green. While you shouldn't underestimate these opportunities for saving money, more revolutionary potential is waiting for companies that use IT to track, monitor and redesign their business environment. Envisioning products from supplier to end-user (and beyond, as companies under EU-mandated reclamation programs are discovering) delivers big profits.

For example, HP was losing out on the market for remanufactured toner cartridges. Rather than leave recycling to others, HP analyzed its value chain and then launched its own recycling and remanufacturing business. The company's recent troubles notwithstanding, remanufactured toner cartridges provide a high-margin business that reuses 11 million cartridges each year and brings in \$100 million in annual revenue.

Meanwhile, technology is supplying environmental data to a degree once thought impossible. Biomonitoring and more sensitive measurement tools can identify—at trace levels—virtually every chemical or emission found in the environment, whether in a polar bear in the Arctic Circle or in the breast milk of a woman in Ohio. It may not be long before all emissions sources are almost completely mapped, if not fully understood—and then the producers of these emissions will be called to account through regulation or the court of public opinion. By providing systems to track and manage corporate environmental performance, CIOs have a key role in mitigating the risks and identifying the opportunities that environmental challenges present.

How to Be Green

CIOs can employ the following environmental strategies to prepare for the business challenges ahead:

- **Know your product.** The Dutch government in 2001 seized 1.3 million Sony PlayStations at the start of the Christmas season because they contained illegal levels of the toxic metal cadmium. Sony had to replace all cables manufactured by an obscure supplier, at a cost of more than \$130 million.

Sony executives vowed never to be caught unaware of environmental risks again. Other companies have since caught on. When my colleague Andrew Winston and I were writing our book *Green*

to Gold: When Smart Companies Use Environmental Strategy to Innovate, Create Value and Build Competitive Advantage, one of Dell's key environmental executives, Don Brown, told us that his company ensures every component has been thoroughly analyzed. "If there's a problem when we hit the dock in the EU," he says, "we can answer any questions with data and avoid holding up 10,000 units in customs."

- **Install an environmental management system (EMS).** Such systems support a company's processes for monitoring and managing their environmental initiatives. When a good system is in place, managers know their business better, find ways

Marrying information-age tools to environmental challenges holds potential to propel some companies ahead of their competitors.

to squeeze out waste, make processes run more efficiently and avoid potential pitfalls. Packaged EMS platforms have already been developed.

- **Capture data and create metrics.** Data is almost always a precursor of environmental improvement. Just one data tracking law—the 1986 EPA Toxics Release Inventory program—started many companies down the path to environmental leadership. Once companies had to report details about their emissions, many realized that valuable chemicals were going up the smokestack, and that reducing waste would lead them to use raw materials more efficiently.

To obtain such benefits, track both relative and absolute metrics. It's tempting to show progress in relative terms, but some problems are absolute. Reducing greenhouse gas emissions relative to sales might indicate improvement. But if sales increase significantly, the problem is still getting worse.

In addition, capture data at multiple levels within a company and throughout your value chain. The ability to drill down by country, division, site and even production line can help isolate problem areas or highlight leading-edge performance. Doing this doesn't have to be expensive. Good measurement often goes hand in hand with tight operational control.

The opportunity to turn green to gold exists, if companies take advantage of environmental data. Protecting the planet can also protect your company by safeguarding its assets, inspiring employees and attracting workers who want more than a paycheck. CIOs will be at the heart of this transformation. **CIO**

Daniel Esty is the Hillhouse Professor and director of the Center of Business & Environment at Yale University. He can be reached at cbey@yale.edu. To comment on this article, go to the online version at www.cio.com/010107.



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The Need for a Branch Office IT Strategy

A solid branch office IT strategy can help ensure you have enough resources, deployed correctly, to keep up with the expansion of remote sites—and save you money

IT continues to make strides in streamlining and centralizing corporate systems and services: reducing server sprawl within the corporate data center, rapidly deploying new revenue-generating applications and ensuring compliance with regulatory mandates.

Unfortunately, the same cannot be said for an enterprise's remote sites and branch offices. Lacking a comprehensive strategy for supporting these important pieces of your distributed enterprise, you risk service disruptions and downtime at key points of customer contact, be it an off-site call center or a retail location. That's not a recipe for success given consumers' Internet-age expectations of getting what they want when they want it. Equally important, a lack of restrictions on remote personnel may enable them to bypass corporate IT policies, jeopardizing your compliance efforts.

Forgoing a branch office IT strategy may cost your company millions of dollars a year. The average site visit costs between \$500 and \$1,000, and IT staff typically visit off-site locations four times a year. That adds up quickly for large organizations, negating gains made in the data center.

Almost 75 percent of Fortune 1000 companies don't have a branch office IT strategy or cost-benefit analysis for supporting remote workers, according to Nemertes Research. But widespread trends, including mergers and acquisitions, the steady uptick in the number of retail, hospitality and banking sites, the growth of the mobile and telecommuting workforce, and even globalization, are creating a widely dispersed workforce. Nemertes Research finds that 90 percent of employees today work away from the corporate headquarters, and branch offices are growing at a 6.5 percent annual rate.

The numbers are not encouraging. Given today's pervasive "do more with less"



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What's Your Challenge?

Every vertical industry is dealing with its own challenges when it comes to supporting branch office IT infrastructure. Out-of-band solutions help businesses secure data, simplify management, continue production and grow revenue.

According to Infonetics' 2005 data, branch office downtime and degradation cost financial services companies \$56 million in lost revenue and \$165 million in lost productivity; for manufacturing, the figures were \$80 million and \$74 million, respectively.

Consolidation in the banking industry has resulted in financial services organizations having to cope with a variety of systems at their acquired properties' branch offices. At the same time, the industry is facing strong regulatory pressures to ensure the privacy of customer data and transactions.

Support challenges on the manufacturing front are only going to increase as manufacturers build new facilities in lower-cost labor markets overseas. Server-based systems are often responsible for monitoring critical production processes, so IT staff at headquarters must be able to remotely monitor and address problems.

In retail, failures of POS servers—especially during the busy holiday season—represent huge risks to the industry, which reports average lost revenue of \$18 million due to network degradation and downtime, according to Infonetics.

attitude toward IT, it's not surprising that most organizations don't track overall network performance closely enough to understand the impact of degradation and downtime at branch offices. Average lost revenue from network downtime and degradation ranges from \$14 million to \$80 million and average lost productivity costs a company anywhere from \$20 million to over \$150 million, according to Infonetics. The trend toward downsizing IT further complicates the picture: Without the tools to more efficiently respond to requests from remote sites, IT staff reductions are going to have a severe impact on service levels across the distributed enterprise.

A business also has to consider whether its approach to branch office IT is compromising its security, particularly as it relates to compliance efforts. While there are technology-enabled checks and balances to support system security, it's critical to ensure the physical security of computer equipment. Likely your data center at HQ is secured with access cards or biometric ID devices, but that's not the case in many branch offices. That leaves the door open for remote personnel—often not even IT personnel—to try to resolve problems on their own, with all the potential that presents for undocumented changes.

"The whole concept of having a physically closed room where equipment resides and no one can access it is very critical," says Jeffrey Nudler, senior analyst at IT research firm Enterprise Management Associates (EMA). "Having no access to a physical space forces people to abide by certain corporate policies."

Given the spotlight on data center infrastructure, it's understandable that organizations are only now thinking about solving

their branch/remote office infrastructure problems. A change is in order, particularly given the high stakes and the increasing IT complexity at branch and remote locations due to heterogeneous hardware, software and networking technology. This leads to a proliferation of management applications and consoles. Without a strategy for centralized control, your ability to share information among systems will be restricted. Management becomes haphazard and costly.

Some companies believe they're covered with software-only solutions such as remote control applications or Microsoft Terminal Services. But these are useless for resolving off-site problems if a system's operating system, application stack or network is not working.

An effective branch office strategy requires gaining insight into your remote infrastructure and then deploying the right technology to support it. One of those technologies is "out-of-band" solutions, which make it possible for internal or outsourced IT to cost-effectively monitor, manage and service off-site operations.

Out-of-band management solutions provide centralized control and repair of local and remote IT infrastructure, even when connectivity is lost or devices are down.

Arriving at an effective branch/remote office IT strategy requires:

- Conducting an inventory of branch office infrastructure, and a survey of how IT resources are supporting it, including costs
- Creating top-level buy-in by presenting a clear picture of the risks and costs of a "catch-as-catch-can" approach
- Streamlining assets at distributed enterprise locations
- Putting in place IT management systems and tools that will enable remote management to minimize visits to off-site locations and provide centralized control

To learn more about Avocent's branch solutions and to download a white paper on how to begin planning your branch office strategy, please visit www.avocent.com/CIOmagazine

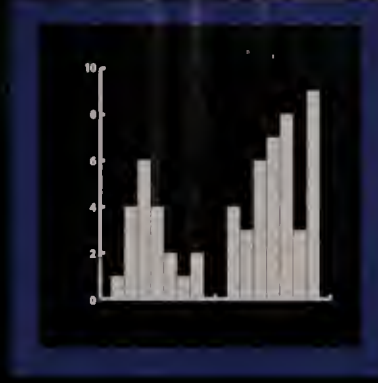
"The fundamental notion EMA is advocating is that in order to be able to manage equipment in this new world we are building, which has branch offices and remote locations, there must be collaboration between out-of-band and in-band," says Nudler.

Many vendors are attempting to help companies improve their distributed infrastructures with out-of-band management solutions. But only Avocent offers an incredible breadth of functionality—appliances with KVM (keyboard, video, mouse control) over IP and serial technology, combined with power control—across a common software platform.

Avocent's branch appliances make it easy to remotely troubleshoot, reboot, or even power-cycle servers or serial-based network devices. Using the DSView management software to monitor devices from a single console simplifies the management infrastructure. Being able to view information about a problem from multiple sources speeds up IT's ability to bring systems back online.

These capabilities are critical for supporting today's widely distributed enterprise, and will prepare your business for the even more complex environment of the future. Voice- and video-over-IP, wireless applications and new Web services will continue to dramatically change both the workplace environment and the customer experience. Now's the time to make sure you put in place a distributed enterprise strategy that will scale to meet the challenges that are coming. ■

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BEYOND Execution

BY CHRISTOPHER KOCH

No one likes to be stereotyped. Yet here we are, in our sixth annual “State of the CIO” report, trying to box you into narrowly defined CIO archetypes. And we know what you’re thinking: “I don’t fit into any of these categories. I have to do a little of this, a little of that, and a lot of everything else to do my job right.”

We agree. What we’re trying to do by extracting these four varieties of the CIO species—Business Leader, Innovation Agent, Operational Expert and Turnaround Artist—from the data our survey collected from you is to identify and define *all* those demands on your time and to illuminate *all* the myriad roles you may be called on to play over the course of your career, in order to help you see where you fit in (and where you *could* fit in) along a broad swath of possibilities. This is an attempt to reconcile the personal skills you bring to the job—your leadership and project management skills, for example—with the different ways your company

may see IT fitting into its long- and short-term goals. For instance, you may be called on to play all these roles at once in a company that views IT as providing a strategic and competitive advantage. Or you may be a younger CIO, working to acquire the skills you’ll need to grow along with an equally young company that’s just beginning to discover the advantages that IT can bring. Or, unhappily, you may be a frustrated visionary working for a company that doesn’t see IT as anything more than a fungible tool that needs, above all, to be cheap.

You may disagree with the categories our research has helped us devise, or you may believe



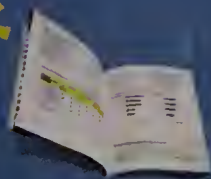
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Archetypes by the Numbers

Innovators Get the Budget

Among our CIO archetypes, CIOs who self-identified as Innovation Agents got the most money to play with—nearly twice as much, on average, as Operational CIOs. Overall, however, IT's 2007 average budget of 7.4% of revenue is down slightly from 2006, when it was a robust 8%.

Budget as a percentage of revenue

Overall	Innovator	Operational	Turnaround	Business Leader
7.4%	10.8%	5.7%	6.9%	6.2%

Turnaround Artists Get the Cash

Organizations that need help have to shell out a premium to get Turnaround CIOs to take them on. But you get what you pay for. If the trouble is bad enough, the help may be worth most any price.

CIO salaries

Overall	Innovator	Operational	Turnaround	Business Leader
\$185,200	\$166,500	\$134,900	\$204,167	\$184,600

Who Talks to the Boss?

Although CIOs who are typed as innovators report to the CEO most often, the real story is how removed Operational CIOs are from their CEOs, with just 23% reporting to the big boss. Interestingly, however, Operational CIOs are only slightly more likely to report to the CFO than any other archetype.

Reporting relationships

	Overall	Innovator	Operational	Turnaround	Business Leader
CEO	41%	55%	23%	47%	46%
COO	14%	11%	21%	18%	8%
CFO	24%	28%	31%	21%	26%
Corporate CIO	5%	0%	5%	3%	6%
Other	15%	6%	21%	11%	14%

NOTE: Totals may not equal 100 because of rounding.

CIO RESEARCH

CIOs have the opportunity to **make a real impact and earn real money** because now they aren't just running IT, they're working on—and, in some cases, owning—**business processes**.

management skills of an Operational CIO, but if the basic IT utility that lets business people do their jobs isn't running up to expectations—and if its unit cost doesn't go down continually—you will soon find yourself unemployed. Guaranteed.

And we're not talking about network uptime. "The business doesn't care about 99.9 percent uptime unless you're talking about the uptime of a business process or an end-to-end capability," says Peter Weill, director of the Center for Information Systems Research and senior research scientist at the MIT Sloan School of Management.

Let's then call it *business* uptime.

The expectations for that are increasing all the time. The percentage of organizations that can afford to have their core IT systems down for any significant period is down to about the 10 percent range, from roughly 35 percent 10 years ago, according to Warren McFarlan, a professor of business administration at Harvard Business School. "It's the reality of how IT has insinuated itself into the minute-by-minute, heart-to-heart operations of organizations," he says.

In short, IT, and therefore the CIO, matters as never before. (To see and compare all "The State of the CIO" data over the years, visit www.cio.com/state.)

there are others that we've left out. We'd love to hear about them all.

Despite all our efforts to slice and dice you, we found that one aspect of the job cuts

across all boundaries and is a prerequisite for success for every CIO: a reliable IT utility. You can have the emotional intelligence of a Business Leader CIO or the project

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“CIOs make **great grandparents** because they can **afford to retire**. They make **lousy parents** because they **work 18 hours a day**.”

—HARVARD BUSINESS SCHOOL PROFESSOR WARREN MCFARLAN

DOLLARS AND SENSE

Ironically, keeping the IT utility running is no longer considered a valuable job skill; it's an expectation. “Delivery gets you in the game,” says Michael Gerrard, vice president and distinguished analyst for research company Gartner. “Then it becomes what you can add on top of that.”

This may help explain why the average CIO salary has risen just 1 percent since 2002. In organizations where IT generally is considered tactical (about 40 percent of organizations overall, according to Weill's research), utility-style IT management is on its way to becoming a commodity that is subject to local and global arbitrage. “I would expect to see these CIOs' salaries remain flat or go down and to see them be phased out and replaced by [outsourcers],” says Weill, dolefully. Only when CIOs are brought in to revive shattered IT organizations are they rewarded for running utility-style IT departments.

THE FOUR ARCHETYPES

Of course, CIOs brought in to fix IT problems bring more to the table than basic IT management skills. They're turning things around, which requires more than a dollop of extra leadership and change management skills. So it should be no surprise that of our four archetypes, Turnaround CIOs (see Page 94) are the most highly paid.

Our archetypes essentially describe four distinct skill sets that bring value to an organization above and beyond the basic ability to run IT as an efficient utility. Organizations that want more than that typically begin with an Operational CIO (see Page 80), who adds value with his project management expertise and his technology smarts, enabling him to deliver IT solutions faster than before (a.k.a. enterprise agility).

These CIOs need to highlight their delivery skills—and keep delivering—to avoid being dismissed as utility CIOs. Indeed, this archetype faces the most challenges in terms of business alignment, access to resources and personal rewards. (See “Archetypes by the Numbers” on Page 66.)

Business Leader CIOs (see Page 70) are those who have good interpersonal skills and solid knowledge of business processes and may emphasize IT governance in the way they do their jobs and administer their departments. (They may hire Operational CIOs to do the heavy lifting.)

Finally, Innovative CIOs (see Page 76) have the ability to help envision and create new business products and services as though they were one of the business gang. Indeed, these CIOs may be experienced businesspeople (our survey shows many come from a sales and marketing background) who are lucky (or shrewd) enough to find themselves in companies where IT is as highly valued as any other competency, and thus the best and brightest are rotated through IT just as they might move through manufacturing and finance. In these rare companies, the CIO is welcomed as an innovative force because IT competence is expected of all senior managers, says Gartner's Gerrard.

WHERE YOU FIT IN

CIOs with some or all of the skills associated with these four archetypes have the opportunity to make a real impact (and

earn real money) because they aren't just running IT, they're working on—and, in some cases, owning—business processes. “By optimizing the core business processes, rather than the systems, the CIO becomes more important,” says Gerrard. “More and more, [CIOs] are being pushed into the role of change agent because they have the perspective of end-to-end core process.”

In the right circumstances—an organization that views IT as strategic—you can transform those processes so that they improve the overall performance of the company. At least that's what Weill and his MIT colleague George Westerman discovered when they studied companies where IT was given command of business process reengineering. In those companies where core processes were not already rigidly defined (think oil and gas and chemical companies, for example), IT's reengineering capabilities had a direct correlation to profitability. “Those CIOs are in high demand, and their salaries are growing,” says Weill.

So is their stress level. As you will see, this year's survey demonstrates conclusively that mere blocking and tackling is no longer enough to get ahead. CIOs have to find a way to manage the IT utility while also demonstrating real ability in at least one—if not all—of four very difficult archetypal skill sets. They may even be managing more than IT. A growing trend, especially as business process leadership falls more and more to CIOs, is that they get to run the processes (as would a COO) after they change them.

There may not be enough time in the day for all this. McFarlan says CIOs are beginning to remind him of his investment banker friends. “Increasingly, it's a role for young people,” he says. “CIOs make great grandparents because they can afford to retire. But they make lousy parents because they work 18 hours a day.” **CIO**

The Ultimate State

To find more in-depth statistics from this year's **STATE OF THE CIO SURVEY** and links to all our previous surveys, go to www.cio.com/state.

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Executive Editor Christopher Koch can be reached at ckoch@cio.com. To comment on this article, go to the online version of this story at www.cio.com/state.



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Pinstripes & Process

*Straddling the
business-technology
divide is second
nature for this CIO
who relies on
communication and
collaboration to get
the job done*

BY STEPHANIE OVERBY

DEFINITION Business Leaders put a premium on understanding business processes; they describe communication, leadership and management skills as core competencies. Their priorities are aligning IT and business goals, using technology to improve business processes, and controlling costs.

David McCampbell can't stand the sight of blood. That never posed a problem for him professionally until he became vice president of worldwide information services for Immucor three years ago. McCampbell is an IT leader for whom a thorough understanding of business processes and operations is paramount to his success. And at Immucor, a maker of pretransfusion diagnostics products, the business is blood. "Me working here is kind of a joke," says McCampbell, who held IT roles at software companies. But soon after he was hired, he learned to steel his stomach and dug in to the IT processes that support Immucor's line of systems to screen in vitro blood. Even today, McCampbell spends as much time thinking about and observing things like antibody screening as he does on information technology itself. He knows that



Business Leaders Build High-Level Relationships

61%

spend significant time interacting with CXOs and businesspeople—the most of any archetype

32%

focus on budgeting and compliance

23%

personally manage IT crises, fewer than any other archetype

56%

consider the ability to lead and motivate staff a top personal skill

3%

say innovation is a dominant part of their role, least of all archetypes

CIO NEAL GUERNSEY fostered a customer-service mind-set in his IT staff by instituting new processes for working with business partners at Feld Entertainment, which puts on shows such as the Ringling Bros. and Barnum & Bailey Circus and *Disney on Ice*.

The Business Leader

“I understand that sales are important; revenues drive business. And what’s important are the processes by which we can make those revenues grow. I can bring that to the table. **That makes me as much a business leader as I am an IT leader.**”

—DAVID McCAMPBELL, VP, WORLDWIDE INFORMATION SERVICES, IMMUCOR

blood, not IT, drives the business. “I understand that sales are important; revenues drive business. And what’s important are the processes by which we can make those revenues grow,” he says. “I can bring that to the table. That makes me as much a business leader as I am an IT leader.”

McC Campbell is the typical Business Leader CIO. This straddler of the technology-business divide is the dominant archetype working today, accounting for 43 percent of respondents to our “State of the CIO” survey.

For these CIOs, tactical skills like technical proficiency and in-depth knowledge of IT take a back seat to achieving their top strategic priorities: aligning IT and business goals (67 percent) and using technology to improve business processes (53 percent). Not surprising, they interact more with CXOs and businesspeople than other archetypes and spend the least time managing IT crises. And you won’t hear Business Leaders talk much about *IT* projects—they’re focused on *business* initiatives. Yet understanding technology remains critical for these CIOs to manage their staff and the expectations of the business.

STRENGTHS

Frank John Wiggins has been all four CIO archetypes at one time or another. But at the Boston Beer Company, where he’s been director of information technology for five years, he’s firmly in the Business Leader camp. “It’s all about the beer here,” says Wiggins. “It’s not about IT.” Like most Business Leader CIOs, he says communication is the key to supporting and enabling the business objectives and optimizing its processes. “You can’t just read

a list of business priorities on paper and say, ‘Oh, I understand it all now,’” says Wiggins. “You have to know what’s truly behind the strategy to offer the best IT options.”

For instance, he says, a typical conversation with the head of sales might start with a discussion regarding a business objective: raise gross sales by X percent. The sales chief will explain how he could make the sales force more effective. That often comes down to getting them better information faster or easier. That will lead to a conversation with Wiggins about how IT might make that happen.

Collaboration is part of a Business Leader’s DNA. When Neal Guernsey became vice president and CIO of Feld Entertainment, he created an outline of IT’s mission: to partner with the business to create and deliver technology solutions that support business needs. IT had lacked that customer service mind-set before Guernsey joined the provider of live action family entertainment.

Delivering on the new mission required him to reach out to partners in the business units to find out what they weren’t getting from IT. Guernsey also needed to inspire and enable his IT staff of 30 to partner with the business to deliver appropriate technology solutions. To help, he instituted customer service training and instituted new policies and processes for working with business partners. For years, Feld Entertainment creative teams had suffered in relative silence behind their Windows-based PCs, unable to work effectively with their external partners working on Macs; IT had a PC-only policy and refused to budge. Today, IT supports both platforms, says Guernsey, who credits his

collaborative tendencies to his years as a Navy fighter pilot and teamwork in previous IT jobs: “When you’re on an aircraft carrier, you’re focused on operations and doing what it takes to get things done. It’s all about collaboration and cooperation. And I apply that to IT.”

Innovation isn’t high on the list of priorities for Business Leader CIOs—just 3 percent said it was a dominant part of their role. And Bennett Cikoch, vice president of IT for Midas International, is the first to admit that. “I don’t generate any big ideas,” he says. He and his team will make independent decisions related to, say, switching to a cheaper telecom provider or keeping security up to snuff—“the nuts and bolts stuff,” he says. “But when it comes to the direction and functionality of systems, that all comes from the business. They tell me what needs to be done.” But don’t be fooled—Cikoch and his business leader brethren are much more than order takers. The successful Business Leader collaborates closely with business partners to define and achieve enterprise goals.

Then there’s budgeting. Business Leaders spend more time on budgeting (32 percent). And they must be pretty good at it: They’ve got the second largest budgets, just behind the Turnaround Artist. “Being able to live and die by a budget is key,” says Immucor’s McC Campbell.

Budgeting savvy gives a CIO street cred with the business. John Parker, executive vice president and CIO of A.G. Edwards & Sons, drills that fiscal responsibility into his staff, surprising them with questions like “How much revenue does it take to increase our earnings by one cent?” Parker

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The Business Leader

knows the answer (\$7.5 million) and his staff had better, too. "You have to make sure they understand why they need to be good stewards of the business resources."

CHALLENGES

Guernsey's a textbook Business Leader CIO. But in his job, he works with a lot of clowns. Literally. Feld Entertainment puts on such shows as *Disney on Ice* and the Ringling Bros. and Barnum & Bailey Circus. So his constituents include everyone from accountants to animal trainers. One business unit runs an elephant sanctuary in Florida, another rebuilds the train cars that bring the circus to town and another oversees the custom manufacturing of all the goodies sold at the shows. Guernsey must work with each to move the whole business forward. "The challenge for me is maintaining it," says Guernsey, who keeps a list of strategic goals on his office wall. "It's easy to say, I made these initial gains and that worked well. It's maintaining that level of communication and coordination that's hard."

Another common trap for this breed of CIO: getting bogged down in business processes. McCampbell and his team recently worked with a third-party vendor to replace a legacy system with a system with better functionality and technology.

"What they do is very complex," he says. "I may want to get in deep, to get that perspective, but I may not need to. It may not be the most valuable use of my time."

Another danger for the Business Leader is confusing the role of "business partner" with "business pushover." "My biggest challenge is taking on too much," says Wiggins. Boston Beer is a leading brewer of handcrafted beer, with \$238 million in annual revenue, but it is dwarfed by the competition. "We compete with multibillion-dollar organizations and the business may want to match them step for step," says Wiggins. But his staff of seven doesn't have the resources to do that. "I have to focus on what will bring value," he says.

And while these CIOs bestride IT and the business, they often pay more attention

to IT's customer-facing side, potentially to the detriment of operations. "Business Leaders, because they spend a lot of time with the business, are stronger on the demand side," says Ellen Kitzis, vice president of research at Gartner. "But they need to be equally strong on the supply side. If they don't understand the investment that needs to be made there, they could drive ahead of where they can actually deliver." You can forget that "partnership" with the business when there's a big security breach or the server goes down at a critical time.

Managing this potential weakness involves utilizing one of the Business Leader's strengths: leading staff. "To be carving out time to be running the business, I have to have really good people on my team

of the business. If I don't understand technology and what we're capable of, I will not commit them effectively."

YOUR BEST FIT

There aren't a lot of organizations where a Business Leader couldn't do some good. Although they are more likely to work in manufacturing, healthcare and financial services, we found these IT leaders in organizations of all sizes across diverse industries. But there may be certain business environments tailor made for them.

Complex organizations, for one, benefit from their touch. This CIO "provides the most value in an organization that's multifaceted," says Guernsey. A company driven by technology, on the other hand, may not get

“It's all about **collaboration and cooperation**. And I apply that to IT.”

—NEAL GUERNSEY, CIO, FELD ENTERTAINMENT

running the technology environment," says Parker of A.G. Edwards. "You have to play to your strengths. Micromanaging the data center would not be playing to my strengths."

And while most Business Leaders will gladly tell you their days of technical proficiency are long behind them, they must understand technology options to be credible with their staff and the business. "I definitely can't talk to my developers about Java specifics anymore. And it takes more and more work for me to stay current with my understanding of technology," says Parker. "But my job is to commit the IT organization to a set of activities on behalf

the most value out of the Business Leader. "If you are a software development company, I'm not sure the head of IT needs to be this kind of CIO," says Wiggins of Boston Beer. "A Business Leader may be better suited to a consumer products company or any organization where IT plays more of a support role enabling innovation, growth, cost savings or change management."

As for office politics, the less, the better. Such jockeying pains a CIO who thrives on cooperation. McCampbell can stomach the sight of blood but not expending energy on political maneuvering. His time is better spent making changes for the business. "I know there's politics—or a degree of it—everywhere. And some people thrive on that," he says. "But most people like me see it as waste of time." **CIO**

Playing Politics

Read the Peer to Peer column **STRADDLING THE GREAT DIVIDE** (www.cio.com/archive/030103/peer.html) to understand how one CIO transformed himself from a technologist to a Business Leader.

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Senior Editor Stephanie Overby can be reached at soverby@cio.com. To comment on this article, go to the online version at www.cio.com/state.



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The Innovation Agent

Something New

This IT leader is a strategist who drives business change—and leaves the details to others

DEFINITION

Innovation Agents put the highest emphasis on strategic thinking and believe strongly in IT's ability to drive new business initiatives. They are very likely to be members of the executive committee that reports to the CEO and they are most often found in smaller and midsize companies.

BY BEN WORTHEN

When, a few years ago, a local politician told Spencer Hamons, CIO of SLV Regional Medical Center, about an upcoming settlement with the tobacco industry, Hamons' first thought was how he could get his rural Colorado hospital a piece of the payout. A close reading of the ballot initiative that would allocate the funds revealed a provision that would reward health organizations for data they collected about smokers, such as the percentage of patients who were current or former smokers. Hamons knew most hospitals didn't have that information. And so, at his insistence, SLV added a field to its patient intake database to collect it. When the ballot initiative became law, SLV got the payoff. "That was a \$200,000 turnaround," says Hamons.

Hamons' inspiration is typical of CIOs who are Innovation Agents, according to "The State of the CIO 2007" survey. Innovation CIOs always think about business first. Compared with other CIO archetypes, more innovators (87 percent) believe that IT should proactively imagine business possibilities. The innovator is also more focused than her peers on generating revenue. Her emphasis on using IT to improve customer service and support reflects this sensibility.

Innovation Agent CIOs focus on the big picture: Among survey respondents, they spend the most time on strategic decision making. "My job is to think about where my organization is going to be 10 years from now and how technology is going to factor into that vision," says Fritz Fekete, director of information systems at the Ohio Education Association.

STRENGTHS

Janet Sherlock, CIO of interior decorating fabric retailer Calico Corners, says strategic thinking is her most important skill, as is true for 70 percent of innovators. As an example, she offers this story about her approach to deploying an ERP system for the company.

Calico Corners traditionally kept inventory in both its 115 retail stores and its distribution centers. Sherlock's team was designing the ERP system to support both. "But we never actually sell anything from the stores," says Sherlock, because customers always place custom orders. Instead of building a system that supported an inefficient business practice, Sherlock suggested that the company stop stocking inventory at stores. Now the company is testing the new inventory model, which has potential to save the company millions.



Innovation Agents Are All About the Business

87%

believe that IT should proactively
envision business opportunities

83%

work for companies with less than
\$1 billion in revenue

77%

percent are members of their
company's executive committee

70%

say strategic thinking and planning is
their most important personal skill

55%

report to their CEO

53%

have worked in sales or marketing

JANET SHERLOCK, CIO of fabric
retailer Calico Corners, saw an
ERP project as an opportunity to
revamp how the company
stocks inventory.

The Innovation Agent

Innovation Agents like Sherlock also know that having a great idea doesn't count unless they can convince the rest of the company to let them implement it. Like most CIOs, innovators cite their ability to communicate as a critical skill. What sets them apart, however, is their expertise at closing a deal. Innovators are more than twice as likely as other CIOs to have a background in sales and marketing. "I spend a lot of time pitching things to my boss," says Sherlock, who worked in sales and marketing for the majority of her time during nearly 10 years at Mobil Oil.

Once an innovator has an idea, he is determined to make good on it no matter what. "They reject the idea of failure," says Rob Austin, a professor at Harvard Business School who is working on a study about the characteristics of innovators. In the course of his research, Austin asked leading questions in an attempt to get innovators to admit to a past failure. They wouldn't. Instead of conceding defeat "they'll just try something else," he says. Geoff Endris, CTO of Capital Assurance, laughs at the description, which he says fits him perfectly, down to the slogan on his coffee cup: "Failure is not an option."

WEAKNESSES

The same can-do, try anything qualities that make CIOs successful innovators can also undermine them if these qualities are not balanced by the steadying presence of a boss or a trusted lieutenant who keeps them grounded in reality.

While keeping the lights on is a responsibility for all CIOs, Innovation Agents hate details. Among survey respondents, innovators report spending less time on compliance, budgeting, meeting with vendors and other detail-intensive work than any of their peers.

"I don't mind projects," says Sherlock, "But the operations and the servers and that sort of thing, blah. That's the part of IT that doesn't do anything for me." This lack of interest in IT operations can get Innovation Agent CIOs in trouble if they don't have someone dedicated to the task.

John Havener, CIO of Hacienda Builders, says that keeping his small department focused on strategic projects forces trade-offs because "we end up getting behind the eight ball when things break."

Due to their determination and ego, Innovation Agents say, they often bite off more than they can chew. "I have unrealistic expectations of what I can really pull off," admits Hamons. He relies on his wife, Coryee Hamons, who is SLV's director of quality services, to keep him grounded. But not every innovator is lucky enough to work with someone who knows how to interpret his intentions. The business picks up on the tone that the CIO sets, creating the potential for a clash of expectations. Not surprisingly, 62 percent of Innovation Agent CIOs—the most of any of the archetypes—report that their biggest barrier to effectiveness is unrealistic expectations from the business.

YOUR BEST FIT

The Innovation Agent works for a company that eschews the need for IT to justify every dollar it spends. "You can't work for a company that thinks IT is a cost to be minimized at all times," says Endris.

Instead, the innovator needs to work for a CEO who is willing to give him the freedom to pull on the threads he is interested in, even if he can't explain exactly why he should. In exchange for that freedom, Innovation Agent CIOs are held accountable for results: They are more likely than their peers to be solely responsible for delivering the ROI on IT projects.

Gaining the freedom to innovate doesn't necessarily require finding a new job. But it does take stable day-to-day operations and strong personal relationships between the CIO and her company's other executives. Innovators are more likely than their peers

“My job is to think about where my organization is going to be **10 years from now** and how **technology is going to factor** into that vision.”

—FRITZ FEKETE, DIRECTOR OF
INFORMATION SYSTEMS,
OHIO EDUCATION ASSOCIATION

to report to the CEO (55 percent) and to be a part of the executive team (77 percent).

When Fekete began his job at the Ohio Education Association, the IT group was in shambles. All management wanted was for him to turn it around. Once he did, he got support for more ambitious projects, such as using the Internet to change how the association communicates with its members. Similarly, Sherlock was hired to be a caretaker, not an innovator. But she took it upon herself to expand her role, writing white papers pitching how different technologies could help the business.

The companies where Innovation Agents work span every industry. However, according to our survey, 83 percent of innovators work for companies with less than \$1 billion in revenue. A possible reason, says Austin, is that innovators thrive when they face resource constraints. Among survey respondents, innovators have the smallest budgets—a classic limitation.

As for the Innovation Agent himself, there is one other requirement: Passion. "I love my job," says Chris France, CIO of the architectural firm Little. "I told my wife if I retired I would probably do this." **CIO**

More About Innovation

For links to articles about **HOW TO EXECUTE INNOVATION** go to www.cio.com/010107.

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Senior Writer Ben Worthen can be reached at bworthen@cio.com. To comment on this story, go to the online version at www.cio.com/010107.

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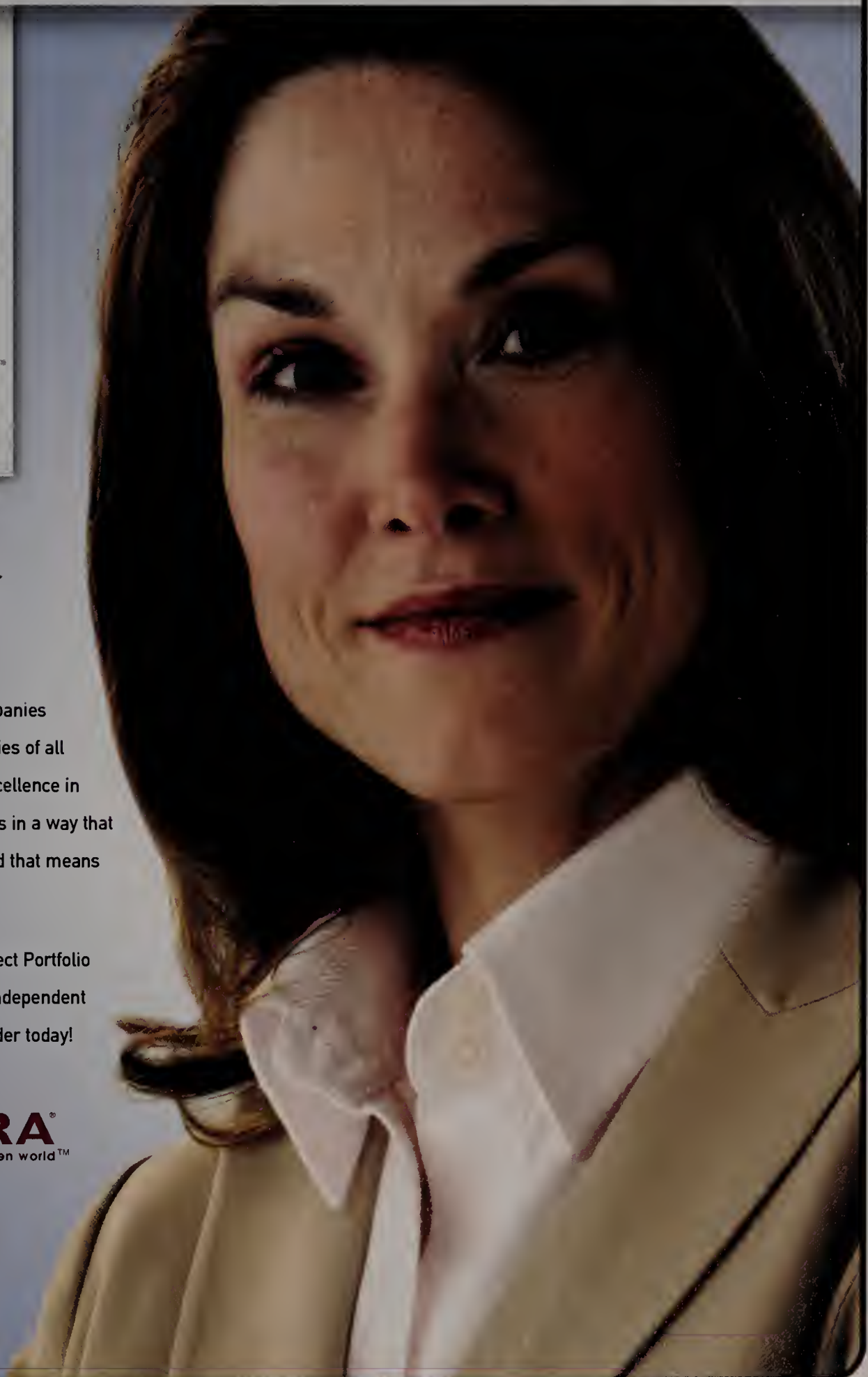
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A close-up portrait of Christine Leja, a woman with short brown hair and glasses, wearing a dark jacket and a patterned scarf. She is looking slightly to the left with a gentle smile.

Operational Experts Fight for Resources

23%

report to the CEO,
the lowest of any archetype

\$135,000

average salary makes them
the lowest paid archetype

46%

spend time managing IT crises

64%

share IT ROI accountability
with the business—
more than any other archetype

69%

have budgets of less than
\$5 million

Southwestern Illinois College's first-ever CIO, CHRISTINE LEJA, was told that implementing an ERP system should be her only priority. But she knew that if that was all she did, the school would not have a network worthy of the name.

The Operational Expert

STAND & Deliver

Whether it's a small project win or a major network upgrade, these IT leaders relish rolling up their sleeves and meeting the challenges of the business head on

BY THOMAS WAILGUM

DEFINITION Operational Experts place a huge emphasis on their project management and execution skills, and their IT department's primary mission during the past year was to cut costs. These CIOs thrive in enterprises where the pressure to deliver IT systems on time, under budget and with full user acceptance is high.

Today's Operational CIO can be forgiven for not responding right away to an interview request. "I will be hard to catch this week," said one. "My calendar is full," said another.

Managing systems architecture. Leading projects. Putting out fires. It's all in a day's work for these unsung heroes of the business, according to "The State of the CIO 2007" survey. Where this CIO thrives is in small or mid-market operations where the pressure to deliver IT systems on time, under budget and with full user acceptance is high—and so is the opportunity to showcase finely honed project management and negotiation skills. In the smaller organizations that are their habitat, these CIOs' implementation of, say, a complicated and expensive ERP system can make or break the business. So failure is not an option.

Such was the case when Christine Leja took the CIO job in 2000 at Southwestern Illinois College (SWIC), a community college system with 25,000 students and \$66 million in revenue. Her marching orders were simple: "Don't do anything else, just ERP," she recalls. SWIC viewed the PeopleSoft ERP implementation as critical to its future ability to compete and grow enrollment. It had to succeed. The administrators saw the project as "the number-one priority of IT," Leja says.

But SWIC had never had a CIO or formal IT department before. When Leja arrived

The Operational Expert

she discovered a decentralized, outdated IT operation with no network integration or services. "We were extremely behind," she says. She knew she had to convince the administration that other tasks—such as upgrading the network—were just as important to its future. "If you only do ERP, you won't have a network," she told them. Without one, she explained, students and faculty wouldn't get the newer technologies and services they expected, and SWIC's growth would be stymied. SWIC's administration agreed, so Leja began developing a strategic IT plan, which included project prioritization, that meshed with SWIC's organizational plan, which further cemented the fledgling bond between the two groups.

Leja's handling of the situation exemplifies traits common to Operational CIOs: meeting the challenges head on, with quiet confidence and tactical resolve that leads to small successes that IT can build upon.

"At some point," says Michael O'Dell, CIO of Pacific Coast Cos., a large building and construction supplier, "results speak much louder than words."

STRENGTHS

Operational CIOs rely heavily on their ability to communicate with business users and key stakeholders about what they need from IT. Indeed, 59 percent called it their top personal skill. They love working with frontline users and solving their problems by using smart, well-thought-out technologies. These CIOs have a deep desire to understand their organization's business processes—nearly 50 percent cited this as a top skill, higher than any other archetype.

Anne Coffin, CIO of Beck/Arnley, which specializes in premium replacement parts for all foreign nameplate vehicles, is keenly aware of the company's core competencies: experience in sourcing products globally, excellent distribution mechanisms and superior customer support, all of which derive from its data. For example, in Beck/Arnley's industry, "parts proliferation" is a common issue. "Given the number of years,

THE MID-MARKET CIO

No Time to Experiment

Smaller companies put emphasis on keeping the lights on

OPERATIONAL CIOs, who typically hail from companies with revenue of \$1 billion or less, are most likely to give the cold shoulder to hot technologies, largely because they don't have the time, money or staff to experiment with them. Their lowest technological priorities are open source (10 percent), new technologies (28 percent), SOA (31 percent), supply chain automation (33 percent) and e-commerce (36 percent), according to "The State of the CIO" survey.

When it comes to service-oriented architecture plans, which are hot now, 44 percent of Operational CIOs claimed they had no plans for SOA, the highest percentage of any archetype. That stat matches a 2006 Forrester report by VP Randy Heffner, which found that fewer midsize companies have innovative plans for SOA than larger ones. What's interesting, however, is that midsize organizations want to pursue SOA: A 2005 Forrester survey reported that 44 percent of small and midsize companies said that implementing an SOA project was a high or critical priority.

Of course, if you're an Operational CIO having trouble proving the value of IT to the business (which nearly half are, according to our survey), then pursuing an SOA—or open-source or e-commerce—project just isn't happening right now. Keeping the network running, e-mail up and the ERP implementation on schedule is. And "innovation" for the IT department usually means making existing products better—not dreaming up new ones in the lab. Just 3 percent of CIOs at midsize companies said innovation is a dominant part of their role, compared with those at small (15 percent) and large (9 percent) companies.

"Where [the business] looks to us for innovation in IT is in finding better ways to make SAP work for them," says Michael O'Dell, CIO of Pacific Coast Cos. "They're not looking for technology just for the pure sake of technology; they're looking for technology that provides a return on the investment."

—T.W.

models and makes, it adds up to a lot of part numbers, as well as many ways of researching, analyzing and globally sourcing those parts," Coffin notes. "IT has to understand how important those data elements are." Accurate data has to be "a given," she says.

Insight into the business plays to the Operational CIO's other strength: project management. "It is essential to have project management skills, to deliver what and when you say you will," Coffin says. In 2005, Beck/Arnley became a privately held company after being owned by a large company for years. Coffin and her staff had six months to develop a team, build an infra-

structure, convert all the company's data and not disrupt operations. Coffin hit the deadline—from e-mail to enterprise system. "Missing dates isn't an option," Coffin says. "Once we'd agreed to it, we were going to move heaven and earth to make it happen."

What makes Operational CIOs such strong project managers is the emphasis they place on their negotiation skills—significantly more than the other archetypes. "Project management extends to determining scope, and scope management requires negotiation," explains Coffin. Peeling back a layer of the data, this group also has the highest level of consulting experi-

ence, which explains their ability to mollify demanding internal customers over a project's life. "Project management is not just moving dates around on a chart, it's really people management," says Coffin. "And it's frequently people management with people that do not report you."

CHALLENGES

For many Operational CIOs, the business side of the house isn't a big believer in the value of IT. Their mission, then, is to win it over. They can do that best by delivering on what they promise—whether it's a small project win, or a strategic plan that aligns IT with the goals of the business. With each success comes respect and credibility. "You can't do [anything] without users who believe in you," Coffin says.

Good communication is key to inspiring such confidence. At Southwestern Illinois College, Leja first had to play the role of interpreter with the top administrators to gain their trust. "You really had to speak English for them to understand why things were done in IT the way they were," she recalls.

But when the business doesn't know how a functional technology department should work, it has little confidence in IT. Not surprising, 44 percent of Operational CIOs said they have difficulty proving the value of IT, the highest percentage of any archetype and significantly higher than CIOs who are Turnaround Artists (18 percent) and Business Leaders (26 percent). Operational CIOs also reported the lowest budgets of all the archetypes and the highest percentage of budgets less than \$5 million (69 percent). While these CIOs mostly hail from small and midsize organizations with smaller budgets, the disconnect between business and IT can negatively affect funding.

Despite the obstacles, Operational CIOs desire to be more strategic; in fact, they rated strategic planning as one of their top three personal skills. However, they don't have as much time as their colleagues do to devote to it: Operational CIOs spent just 23 percent of

“The **business side** is not looking for whizbang technology solutions. They're looking for **practical solutions** that make financial sense and offer a competitive advantage.”

—MICHAEL O'DELL, CIO, PACIFIC COAST COS.

their time on strategic business planning—significantly less than any other archetype.

They also reported to the CEO much less often (23 percent) than the other archetypes and spent little time interacting with external business partners and customers. This reluctance to “press the flesh” and shmooze up and down Mahogany Row is a byproduct of a hectic workload and a tendency toward introversion. “It is a traditional IT weakness: We're not great socializers,” Leja says. Over the years, she has worked hard “to get past that, to learn how to socialize at a VP level.”

This reticence means these CIOs are sometimes hesitant to market the strengths and successes of the IT organization—and themselves—to the business. “I would rather work on solutions [for the company],” says Pacific Coast's O'Dell. He says there is a fine line between “tooting our own horn or informing people” of what's going on in IT.

But however reluctant Operational CIOs are to sing their own praises, they must do it to ensure IT plays a leading role in the business. Marketing becomes even more crucial if a CIO aspires to move her IT department out of the operational mode and into that of an innovation or business partner relationship. But such change won't come overnight, according to Laurie

Orlov, a vice president and research director at Forrester Research. Operational CIOs have to be realistic about what the business really wants from IT. If there's no business appetite for more proactive recommendations from IT, she says, these CIOs are likely to be stuck in operational mode for a long time to come.

YOUR BEST FIT

Operational CIOs are a different breed. Where they see smoke, they know there's fire, and they move toward it. As such, they are drawn to lead organizations that are grappling with 21st-century IT demands while trying to get by with 20th-century infrastructures. At SWIC, Leja knew there would be technology hurdles. “I didn't come in blind,” she says.

Based on our research, the Operational CIO tends to succeed in organizations where: IT supports the business (first and foremost); a premium is placed on alignment of business goals and IT processes; business continuity and staff development are key; ensuring data security and integrity is paramount; lots of open-source, SOA or e-commerce skills are not necessary; and the business side knows it needs IT help.

“The business side is not looking for whizbang technology solutions,” O'Dell says. “They're looking for practical solutions that make financial sense and offer a competitive advantage.” **CIO**

The “M” Word

Operational CIOs aren't alone in their reluctance to market IT. Overcome your reservations and learn how to do it by reading Forrester Research's step-by-step guide. Find the link at www.cio.com/010107.

CIO.com

You can reach Senior Writer Thomas Wailgum at twailgum@cio.com. To comment on this article, go to the online version at www.cio.com/state.

Congratulations, you're finally getting your
enterprise information under control.

The Survey

All That DATA

Your responses to this year's survey tell us you are finally getting the freedom to focus on strategic issues, but you still struggle for alignment, compensation and recognition

BY CHRISTOPHER KOCH

CIO RESEARCH

SURVEY METHODOLOGY

CIO's "State of the CIO" survey was administered online from Aug. 11-24, 2006. IT leaders were randomly selected from our circulation file and invited to take our fifth annual survey, with 568 responding. All were heads of IT, with 88% responsible for enterprisewide IT and 12% in charge of divisional IT. Thirty-nine percent of respondents were from companies with annual revenue of \$100 million or less, 36% were from companies with revenue between \$101 million and \$999 million, and 22% had revenue of \$1 billion or more. Eighty-five percent of respondents were male, and 15% were female. The margin of error is $\pm 4\%$. Not all respondents answered all questions. Percentages may not add up to 100 due to rounding.



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SYBASE®

Your Résumé

Staying Power

Your average job tenure has risen steadily since 2004, though it is more than a year shorter at large companies than at small and midsize companies.

AVERAGE TENURE IN
YOUR CURRENT POST

5 yrs, 20 days

Your Boss

Though CEOs claim IT is of critical strategic importance, they continued to have the CIO report to another executive nearly 60% of the time—for the third year in a row.



YOUR PRIMARY STRENGTHS

- 52%** Communication/leadership/management skills
- 20%** Business or industry knowledge/experience
- 12%** Project management/execution skills
- 10%** Deep knowledge of technology
- 7%** Turnaround/change management skills

Talking the Talk

Your top skills haven't changed much, but CIOs from large and midsize companies emphasize **leading and motivating staff**, while CIOs at small companies focus more on their own **technical proficiency**.

THE PERSONAL SKILLS MOST PIVOTAL FOR YOUR SUCCESS AS A CIO

1. Ability to communicate effectively
2. Strategic thinking and planning
3. Ability to lead/motivate staff
4. Understanding of business processes and operations
5. Ability to influence change in others
6. Understanding of industry trends and business strategy
7. Negotiation skills
8. Thorough knowledge of technology options
9. Technical proficiency

NOTE: Respondents checked top three skills.

The average CIO makes **\$23,562 less** than five years ago (adjusted for inflation). Your average salary has remained flat since last year and has risen only 1% since 2002.

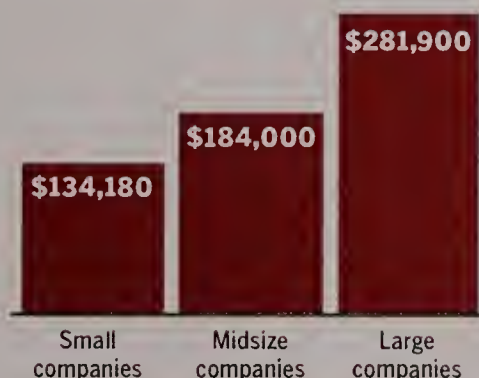
HIGHEST PAYING INDUSTRIES FOR CIOs

1. Retailer/wholesaler/distributor **\$248,750**
2. Insurance **\$245,171**
3. Technology manufacturing **\$203,226**

THE LOWEST PAYING

1. Government **\$116,490**
2. Education **\$137,939**
3. Health care **\$169,808**

YOUR COMPENSATION VARIES BY YOUR COMPANY'S SIZE

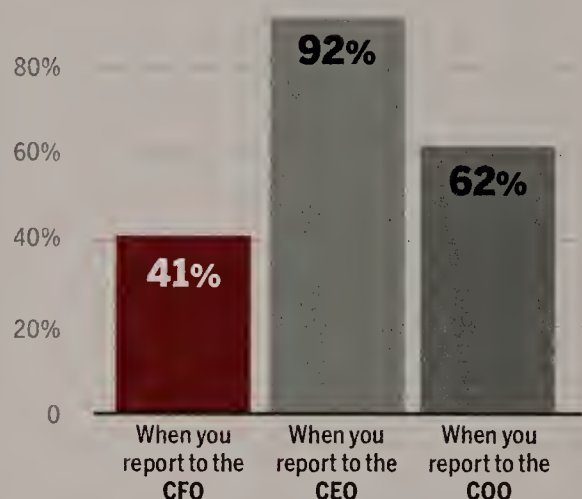


NOTE: Average pay by revenue size (Large = \$1 billion or more; Midsize = \$101 million to \$999 million; Small = \$100 million or less)

The Perils of Reporting to the CFO

Ever wonder why some ambitious CIOs refuse to consider reporting to the CFO? Wonder no more. CIOs who report to CFOs tend not to be a part of the executive committee, earn less, spend more time running projects and less on strategic planning, and have to work harder proving the value of IT than CIOs who report to the CEO or COO.

YOUR CHANCE OF BEING PART OF THE EXECUTIVE COMMITTEE

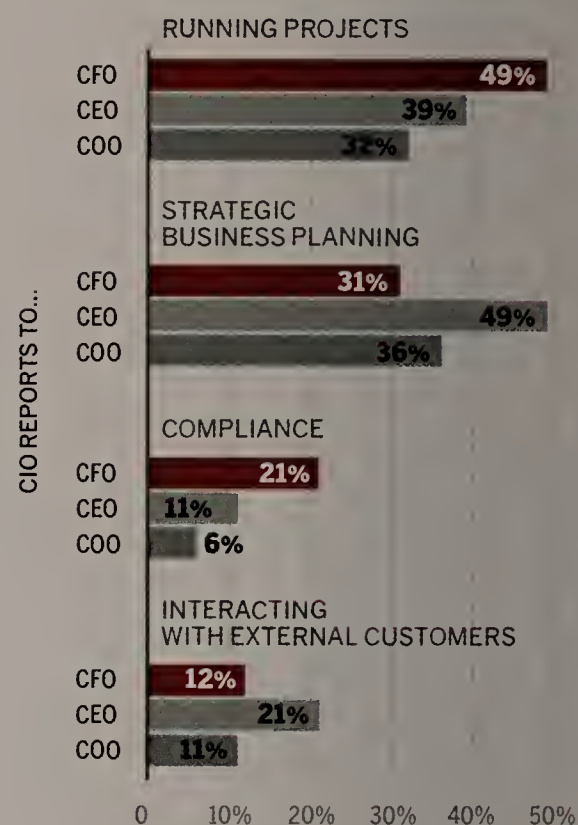


HURDLES

40%
of CIOs who report to the CFO had difficulty proving the value of IT

Only **21%**
of CIOs reporting to the CEO had the same problem

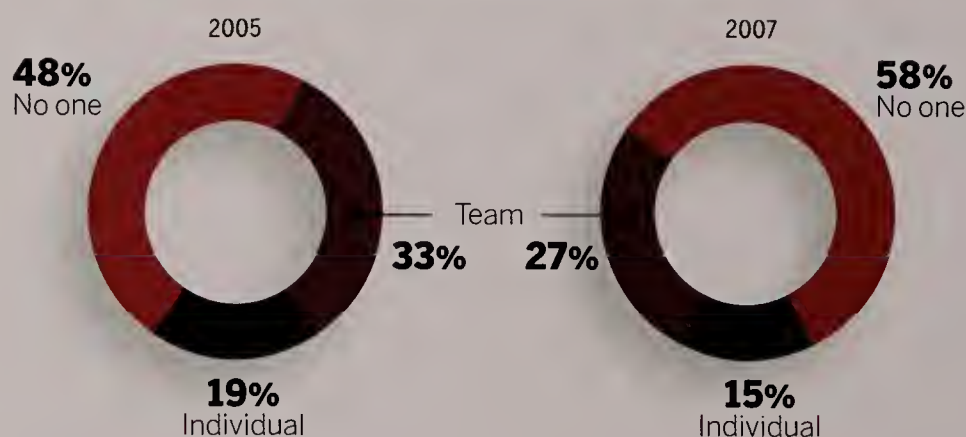
TIME YOU SPEND ON...



The Innovation Story

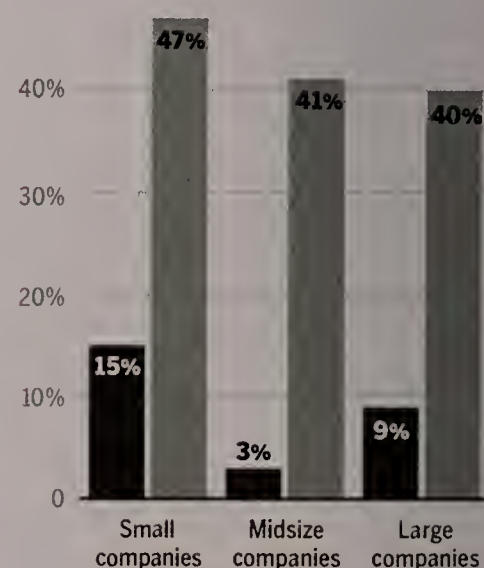
You have fewer staff devoted to R&D today than when we last checked in 2005. However, innovation is a more dominant part of your role today, and IT is spawning more innovation than it did 12 to 24 months ago.

I.T. STAFF DEVOTED TO R&D



SMALL COMPANIES ARE DOMINANT INNOVATORS

- INNOVATION IS A DOMINANT PART OF THE CIO ROLE
- PERCENTAGE OF INNOVATION THAT CAME OUT OF I.T.



MOST INNOVATIVE INDUSTRY CIOs: **TECH**
MANUFACTURING LEAST: **HEALTH CARE**

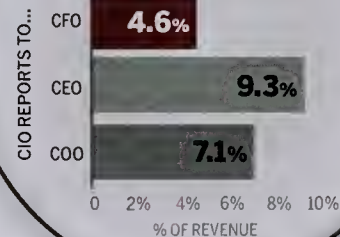
NOTE: Average by revenue size (Large = \$1 billion or more; Midsize = \$101 million to \$999 million; Small = \$100 million or less)

Your IT Department

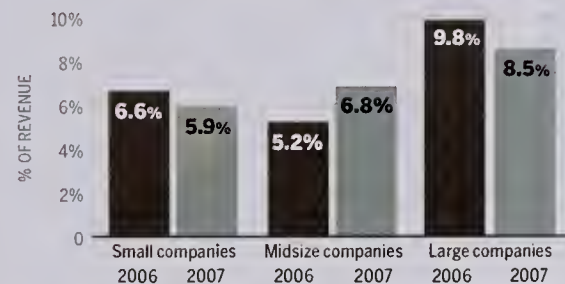
AVERAGE I.T. SPENDING
AS A PERCENTAGE OF
REVENUE

7.4%

I.T. SPENDING BY
REPORTING
RELATIONSHIP



I.T. SPENDING BY COMPANY SIZE

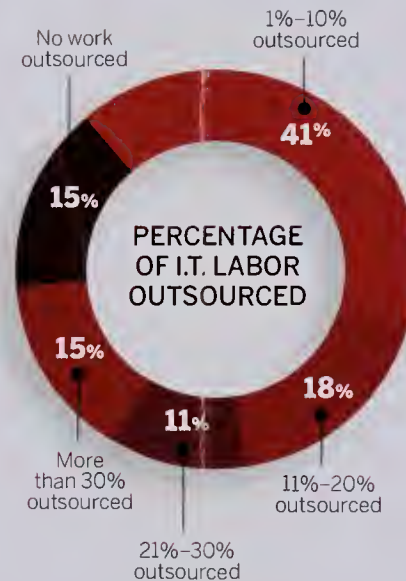


NOTE: Average by revenue size (Large = \$1 billion or more; Midsize = \$101 million to \$999 million; Small = \$100 million or less)

I.T. SPENDING BY INDUSTRY

	% OF REVENUE
Finance/banking/accounting	8.3%
Government (state or local)	7.5%
Tech manufacturing	7.3%
Insurance/real estate/legal	6.0%
Education	5.9%
Health care/medical/pharmaceutical/biotech	5.6%
Manufacturing and process industries (nontech)	5.0%
Retailer/wholesaler/distributor	4.4%

INDUSTRY ADDING THE
MOST NEW STAFF: **TECH 13.5%**
LEAST: **EDUCATION 4.3%**



Hot Jobs

The quest for new staff continues, with **project managers** and **application developers** topping the list again, and **database administrators** moving up to third.

YOUR STAFFING FORECAST

CHANGE IN I.T. HEADCOUNT IN THE NEXT 12 MONTHS
■ Net increase ■ Unchanged ■ Net decrease

Year	Net increase	Unchanged	Net decrease
2003	48%	24%	28%
2004-05	37%	46%	17%
2006	55%	36%	9%
2007	54%	34%	10%

Why SOA Is Good for CIOs

CIOs working with service-oriented architecture are at the leading edge of their profession. They make more money, have bigger budgets, have more strategic impact and play a larger role in innovation.

SOA SPELLS MONEY

AVERAGE COMPENSATION OF CIOs WORKING WITH AN SOA AVERAGE COMPENSATION OF CIOs WORKING WITHOUT AN SOA

\$250,000 \$159,000

AND THEIR BUDGETS ARE BIGGER TOO

WITH SOA 8.9% WITHOUT SOA 5.8%

NOTE: IT budget as percent of overall revenue.

43% OF SOA CIOs BELIEVE IT WILL PROVIDE COMPETITIVE ADVANTAGE. ONLY 29% OF THOSE WITHOUT SOA FEEL THE SAME.

SOA LEADS TO THE EXECUTIVE COMMITTEE'S DOOR

CIO IS PART OF THE EXECUTIVE COMMITTEE



MORE RESULTS ON PAGE 92

The Daily Grind

Less Strategic Involvement?

Shmoozing and systems remain your top activities, but this year you focused more on **staffing** and less on **business strategy**.

NUMBER-ONE
ACTIVITY AMONG
SMALL COMPANY
CIOs: LEADING
PROJECTS

HOW YOU SPEND YOUR TIME

- Interacting with your company's CXOs and business executives
- Making strategic systems decisions
- Hiring, developing and managing the IT staff
- Leading projects
- Strategic business planning
- Developing/managing the IT architecture
- Designing/optimizing business processes
- Interacting with IT vendors/service providers
- Managing IT crises
- Budgeting
- Learning about technologies
- Interacting with external business partners/customers (not IT vendors)

NOTE: Respondents checked top five activities.

YOUR BIGGEST BARRIERS TO JOB EFFECTIVENESS

	2003	2004-5	2006	2007
Overwhelming backlog of requests/projects	NA	NA	1	1
Shortage of time for strategic thinking/planning	4	3	3	1
Inadequate budgets	1	2	2	3
Unknown/unrealistic expectations from the business	9	1	4 & 5	4
Lack of business sponsorship/accountability for IT projects	NA	NA	NA	5
Lack of key technical skill sets within IT	6	8	6	6
Difficulty proving the value of IT	7	4	10	7
Lack of business knowledge within IT department	11	9	8	8
Overwhelming pace of technology change	12	7	7	9
Lack of alignment between business goals and IT efforts	3	5	9	10
Risk and uncertainty due to volatile economic conditions	5	6	11	11
Inability to negotiate favorable terms with technology vendors	15	10	12	12

NOTES: 1. Respondents checked top five barriers. 2. In 2004, "Unknown/unrealistic expectations from the business" and "Lack of business sponsorship/accountability for IT projects" were combined into a single choice. 3. In 2003, other responses were (in rank order): 2. Conflicting business priorities, 8. Weak corporate performance, 10. Disconnects with executive peers, 13. Poor vendor support, 14. Managing staff/building.

Your Agenda

Process Improvement Replaces Cost-Cutting

Alignment remains your top management priority, but **process improvement** has moved up while **cost-cutting** has been de-emphasized.

YOUR TOP MANAGEMENT PRIORITIES

	2006	2007
Aligning IT and business goals	1	1
IT-enabled process improvement	4	2
Business continuity/ risk management	2	3
Improving internal user satisfaction	5	4
IT staff development	6	4
Measuring and communicating IT value	12	6
Improving project management discipline	7	7
Controlling IT costs	3	8
Regulatory compliance	10	9
Revenue-generating services/ products	NA	10
Data privacy	8	11
IT governance	11	12
Internal IT knowledge management	9	13
Scaling IT globally	NA	14
Other	13	15

NOTE: Respondents checked top five priorities.

BUSINESS PROCESSES YOU ARE IMPROVING WITH I.T.

	2006	2007
Accounting and finance	1	1
Customer service/support	2	2
Human resources	3	3
Compliance	NA	4
Marketing	7	5
Sales	5	6
Order/invoice processing	8	6
Asset management/maintenance	4	8
Inventory management	6	9
Risk management	NA	9

NOTE: Respondents checked all that applied.

Technology Priorities: Getting Down to Business

You remain as involved in integration and security as you were in 2006, but developing new business services has rocketed up the charts, indicating that IT will deliver more value to the business in the year to come.

YOUR TOP TECHNOLOGY PRIORITIES

	2006	2007
Integrating/enhancing existing systems and processes	1	1
Ensuring data security and integrity	2	2
Business intelligence	3	3
New business services/products (i.e., Web services)	8	4
Mobile/wireless	7	5
External customer service	4	6
New technologies	10	7
Service-oriented architecture/enterprise architecture	5	8
E-commerce	6	9
Supply chain automation/visibility	9	10
Open-source software	12	11
Other	11	12
Don't know	NA	13

NOTE: Respondents checked top five priorities.

Innovation Rules

After a brief rise to number two in 2005, competitive advantage dropped to its perennial spot in the middle of the benefits pack, but enabling business innovation has risen to number one.

YOUR VIEW OF I.T.'S IMPACT ON THE ENTERPRISE

	2006	2007
Enabled business innovation	3	1
Reduced business costs	1	2
Improved (external) customer satisfaction	2	3
Created competitive advantage	5	4
Improved security/risk management	4	5
Enabled new revenue streams	8	6
Grew existing revenue streams	7	7
Enabled regulatory compliance	6	8
Enabled global expansion	9	9
Supply chain automation/visibility	10	10

NOTE: Respondents checked the three greatest benefits.

Your enterprise information is exploding,
along with the demands to make it all mobile.

NOW IT'S UP TO YOU TO MAKE IT WORK.

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get serious about
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The Turnaround Artist

Meet MR. FIX-IT

BY THOMAS WAILGUM

*IT is broken:
Now fix it.
That's the
welcome many
Turnaround
CIOs receive.
And they relish
the challenge.*

DEFINITION Turnaround Artists are hired guns and risk takers who see themselves first and foremost as agents of change. They've got deep experience in IT and have the ability to come into a chaotic situation, ascertain what the business needs most, recharge a beaten-down staff and start piling up the wins—quickly.

Completely messy, chronically dysfunctional and insanely challenging: That's the IT situation in which Turnaround CIOs usually find themselves, though the company names and locales change. And they love it.

When Jay Rollins signed on as vice president of IT for Churchill Downs, owner of horse tracks and races including the Kentucky Derby, he found an IT infrastructure "more along the lines of something you'd see in the '80s," he recalls, "and whether it was functional or not is up for debate." This was in 2004. What hurt even more: IT-enabled advances that were common in much

Turnaround Artists Are Change Masters

3.9 years

on the job is the shortest tenure
of all the archetypes

\$204,000

is the biggest paycheck
of any archetype

58%

cited their ability to influence change
in others as a top personal skill

58%

are directly accountable for IT ROI

\$4.3billion

in average revenue makes their
companies the biggest
for any archetype

Churchill Downs CIO
JAY ROLLINS knows
inefficiency when he sees it—
and “it gets the juices flowing.”



The Turnaround Artist

A Paint-by-Numbers Portrait of the Artist



45%
of Turnaround CIOs
had experience in
business operations,
the **highest** percent of
all the archetypes



16%
led projects
themselves, the
lowest percentage
of any archetype



42%
had begun a
service-oriented
architecture effort

CIO RESEARCH

of the gaming industry—such as Internet, wireless and sophisticated customer-loyalty applications—were also missing. An example of this problem, Rollins says, would be on occasions when Churchill Downs would offer the same loyalty reward for its \$125,000 bettor as it did for its \$40 bettor: a bobblehead doll. “We were not treating the big customers any better than the small customers,” he recalls.

Turnaround CIOs, as defined using “The State of the CIO” survey data, call change management skills their primary personal strength. They’ve got deep experience in IT, and they are hired to make tumultuous changes to the IT department—and make

ascertain what the business needs most, recharge a beaten-down staff and start building successes is both an amazing feat and all part of the plan. “You know coming in what you’re going to do first, second, third,” says Marc Smith, a veteran of three turnarounds who is now director of IT for Pabst Brewing Co.

That’s a good thing—because usually there’s no description of IT or its services to be found, no centralized inventory of IT assets or vendor contracts, and no Cliffs-Notes for how IT should support business operations.

Just before Smith joined the company in 2004, Pabst management decided to upend its business model: Pabst would

“The CFO basically said **IT was broken, and it needed fixing,**” Rollins says he was told when he arrived at Churchill Downs. That’s the typical welcome a Turnaround Artist receives.

them ASAP. Sixty-eight percent of Turnaround CIOs said their top priority from the business side is to align IT and business goals; that’s the highest of any archetype.

These change gurus get an anxious initial greeting. “The CFO basically said IT was broken, and it needed fixing,” Rollins says of his arrival—which, it turns out, is the typical welcome a Turnaround CIO receives.

STRENGTHS

The Turnaround CIO’s ability to come into a chaotic situation,

outsource all brewing operations on the 50-plus beer brands that it owned and morph into a virtual brewer. Management also had the opportunity to outsource all IT operations but decided to decline. “All legacy systems were built along the lines of running a manufacturing concern,” Smith says. “That no longer applied to the new business model.” They ultimately decided to keep IT in-house, build a virtual brewery system to manage operations and get IT under control. “Much of [my job] was just bringing order to chaos,” Smith says.

One of the Turnaround CIO’s strengths is his ability to prioritize. According to the survey, nearly half of Turnaround CIOs reported having experience in business operations, which was the highest percentage of all archetypes.

Combine that with a deep background in IT—82 percent of Turnaround CIOs listed IT as their primary experience prior to their current job, which was also the highest percentage among all archetypes—and you’ve got a CIO who can spot inefficient business and IT processes a mile away.

“I hate inefficiency,” says Rollins. “When a situation is presented to me with a lot of opportunities to gain efficiencies, it gets the juices flowing.” At Churchill Downs, Rollins quickly set out to fix ineffective practices, such as business users avoiding an existing ERP system and



CIO EXECUTIVE VIEWPOINT

Going Mobile...

With mobile messaging, the ultimate *new* way to conduct *old* business

Marty Beard

President, Sybase 365

Mobile messaging isn't just a consumer phenomenon, says Marty Beard, president at Sybase 365. Rather, it is the ultimate way for global enterprises to reach customers and conduct business. Read on to learn why CIOs worldwide are taking notice too.

How should enterprises think about mobile messaging?

Enterprises should see mobile phones as *the* most pervasive channel they have to reach customers. The total number of mobile subscribers worldwide has surpassed 2 billion—more than the number of credit card holders or Internet users—making it the largest enterprise distribution channel in the world. With almost 100 percent of all mobile phones SMS-capable, it's possible to reach nearly every user through mobile messaging. Yet few enterprises use it, leaving the mobile generation waiting for enterprises to catch up.

How are enterprises using mobile messaging?

Many companies are using mobile messaging to increase brand awareness, improve customer service and expand their global reach. Citibank customers, for example, can sign up to receive free mobile SMS alerts to get real-time updates on banking and stock activities. In retail, Dunkin' Donuts used mobile messaging to build brand awareness and foot traffic around the opening of eight new stores in Italy. They saw a 20 percent increase in sales during the campaign.

nology globally, increasing the value and reach of their existing infrastructure.

What challenges can CIOs expect?

First, CIOs need to think about security. As enterprises extend more valuable corporate data to mobile devices, it's important to protect it. Second, network reliability and availability are essential. Finally, in addition to using mobile phones for email and text messaging, people want to transact business by phone (banking, stock trades, etc.). CIOs need to satisfy that demand. Many people think widespread mobile commerce is years away. We think it's coming much faster than that.

Why is network interoperability important?

Here we're talking about interoperability between mobile operators—that is, enabling operators to exchange messages across all technologies and platforms (for example, enabling Verizon users to communicate with Cingular users). What used to be relatively isolated networks in one geographic region are increasingly being forced to interconnect, and when you consider the amount of traffic we're seeing now—



ingly, CIOs need a vendor with expertise in both mobile enterprise software and mobile enterprise services, such as mobile messaging and content delivery.

What advice would you give CIOs?

First and foremost, CIOs need to get familiar with mobile messaging and start using it. A recent study reported that 81 percent of consumers under 35 years old would like to interact with their suppliers on their phone, yet only 2 percent of companies offer it. Most enterprises still see mobile messaging as a consumer phenomenon only. But there are innovators, like Citibank, that clearly see the value of the technology. No longer is the mobile phone simply a communications device. It's an interactive, revenue-generating communications hub with 24/7/365 global reach...the ultimate enterprise channel.

For More Information:

Check out this case study,

"Citibank: Wireless Banking in Europe, the Middle East and Asia Pacific", at www.cio.com/whitepapers/sybase

"Enterprises should see mobile phones as *the* most pervasive channel they have to reach customers."

How can CIOs monetize the technology?

The mobile phone provides more opportunities for direct, personalized interactions with customers than any other channel. A mall in Singapore, for example, uses mobile messaging to increase the revenue per mall visitor. For the duration of their visit, shoppers receive targeted text messages informing them of special events, promotions and coupons. Because little incremental investment is required, CIOs can quickly and easily monetize the tech-

easily billions of messages per month—interoperability between operators is a requirement for the seamless delivery of these messages.

What should CIOs look for in a mobile messaging partner?

CIOs need a partner with a footprint that is truly global—one that already has the interconnection across all the major operators. One that understands device management and security. And increas-

SYBASE | 365

MOBILE SERVICES



Custom Publishing



CIO EXECUTIVE VIEWPOINT

Winning Innovation

It's not just about the next cool thing

G. Michael Escoe**Vice President, Americas Marketing, Orange Business Services**

When it comes to innovation, there seems to be no one more passionate than Michael Escoe, vice president, Americas Marketing, at Orange Business Services. He says that innovation isn't just about the slickest new product, but rather about endeavoring to be cutting-edge in the way you do business. Here's what else he had to say.

What is innovation?

Most people think of innovation in terms of new products or services, which is important because that certainly creates advantages in competitive markets. But let's not forget about process innovation. We believe process innovation has the greatest impact on customer loyalty by creating a more efficient and effective work environment. So an equal focus on product and process is the only way to approach the marketplace. That's what we do at Orange Business Services.

What is today's business argument for investing in innovation?

Innovation fosters the new ideas, technology and processes that spur good business. It's no longer feasible to compete solely on cost, so the capacity to innovate has become the most critical element to sustaining a business edge. In an increasingly competitive marketplace, an "innovation-friendly" environment promises to foster the cutting-edge talent required to meet the challenges of today's business environment.

"The definition of innovation is ever changing and is already evolving away from trying to create the next new, cool product."

How has innovation evolved over time?

The definition of innovation is ever changing and is already evolving away from trying to create the next new, cool product. Current expectations are that innovation be steeped in practicality. Things change so rapidly now that it forces a huge dependency on customer expectations – products only make sense if customers will use them, and no one can afford to make mistakes. At Orange Business Services, we take customer input very seriously and spend a lot of time discussing what we're doing with our customers so they can give us their assessment.

Why is it important for CIOs to partner with vendors that invest heavily in innovation? What characteristics should they look for in partners?

Even in a poor economy, the pressure for innovation really doesn't cease. The key is to find partners that will help you create the processes, services and solutions that will enable you attain the main ingredient to success – which, of course, is happy, paying customers.

How pervasive is innovation within Orange? Do you consider it to be a differentiator for the company?

As a member of the France Telecom Group, we have outlined a five-year strategy called NExT (New Experience in Telecommunications), for which we're committing 2 percent of total group revenues to R&D by 2008, which could total as much as \$1 billion USD in R&D spend. But it's more than just money; committing resources is also important. We employ more than 4,200 researchers and seek out partnerships in "high-think" areas like Boston and San Francisco to be close to the likes of MIT and Stanford. We have some of our 17 research and development labs looking at a development window of 10 years and other labs looking at what is coming in the near future.

Can you give me an example of a successful innovation initiative at Orange Business Services?

One of our most interesting examples of innovation is a project we call "Widgets." It's at the center of a new Orange Business Services application that allows users to identify and access data on their cell phones or PDAs with a single click, rather than hunting and pecking on a tiny keyboard. The data sets range from a contact database or customer service record to a stock quote. It's all about simplicity and convenience, and ultimately enhances the customer experience – which is the cornerstone to all of our innovation.

**What advice do you offer business and IT leaders who want to foster a culture of innovation?**

First, in order to really foster a culture of innovation, you must learn to accept failure. After all, it's better to fail at the R&D level than in a live environment. Second, although it may be difficult in these cost-conscious times, you need to create an open environment of innovation. Innovation is everywhere, not just in R&D. Third, set clear strategic goals, making innovation an integral part of your business strategy. Fourth, find evangelists to drive the vision and innovation. Be sure to consider all employees innovators. And finally, remember that innovation is not only about technology but about business process improvement as well.

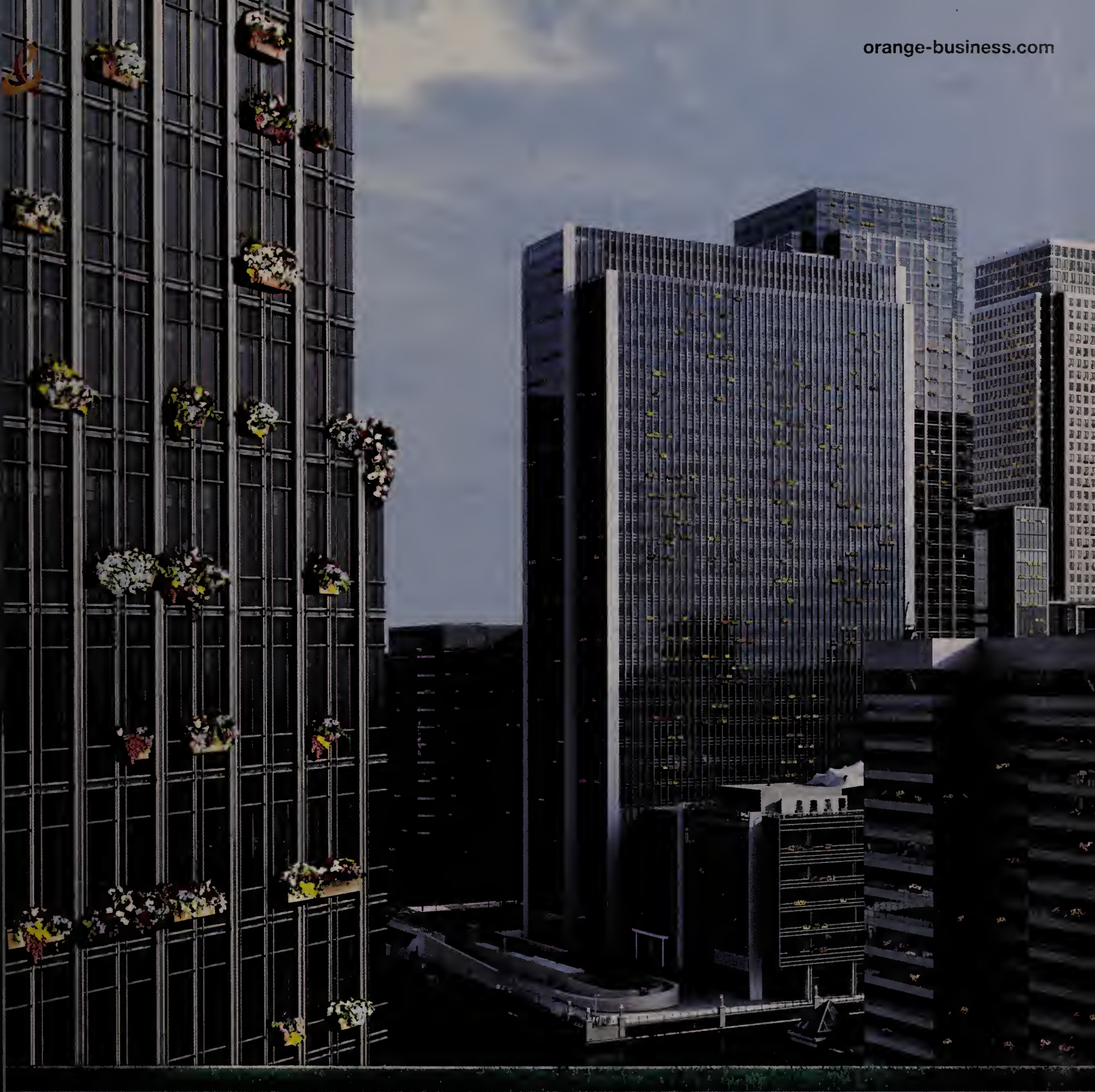
For More Information:

Check out this white paper, "Machine To Machine" at www.cio.com/whitepapers/orange



**Business
Services**





business. unusual

Photo: Andy Glass ★ EuroRSCG C&O

As a true entrepreneur, you're convinced your creativity is a strong asset. That doing things differently leads to success. To help you realize your full potential and remove complexity from your daily business life, Equant, France Telecom and Orange have joined forces under **Orange Business Services**.
opening up new opportunities

global communications mobility secured applications outsourcing

**Business
Services**



The Turnaround Artist

“You’re coming in and you’re trying to make some **hard** and **quick decisions**. What you’re going to **salvage** and what you’re going to **let go**.”

—MARC SMITH, DIRECTOR OF I.T., PABST BREWING CO.

laboring to use Excel spreadsheets (which in some cases weren’t completely up to date) for core ERP processes and business intelligence; and the use of unmanageable one-off vendor contracts that didn’t allow for any technology standardization. Rollins adds that by the next Kentucky Derby he will have implemented new Internet and wireless applications that will mean shorter lines for customers.

Wasteful operational processes are also the enemy of Charles Livingston, senior vice president of technology for Exclusive Resorts, whose members pay for access to upscale vacation homes. In one instance, Livingston married members’ desire for self-service with a Web-based reservation application: This increased the company’s customer-to-internal-staff ratio by 300 percent while helping improve the level of customer satisfaction to more than 90 percent—meaning a lean team delivers better service, he says. (Livingston, though not in a typical turnaround situation because his company is still young and growing, has the entrepreneurial and risk-taking qualities of typical Turnaround CIOs.)

Though it can be an uncomfortable challenge for other CIOs, Turnaround CIOs are well-prepared for the “house cleaning” they’ll need to do. “You’re coming in and you’re trying to make some hard and quick decisions,” Pabst’s Smith says. “What you’re going to salvage, and what you’re going to let go.” That usually involves IT staffers. Rollins says of the 28 IT staffers he inherited when he took the job, only two remain in his now 22-person team. “We decided we needed fewer people [in IT] but higher skill sets,” he says.

In our “State of the CIO” survey results,

58 percent of Turnaround CIOs cited their ability to influence change in others as one of their top personal skills, compared with just 34 percent overall. And more than half of these CIOs called their ability to lead and motivate staff a top skill.

CHALLENGES

What’s the most critical challenge that Turnaround CIOs face? Deciding what to do when the initial turnaround is complete. Or, as Marc Lewis, who as CEO of executive search firm Leadership Capital Group has placed several Turnaround CIOs, puts it: shaking the stigma of being “just a Turnaround CIO.”

At Pabst, Smith is going through that now: A recent shake-up in senior management has provided Smith with another new beginning and a new set of challenges. “I think I’ve got to do some convincing of these new folks,” Smith says, “to show them that I can step up to that, that I’m not just a one-trick pony.”

If not, Smith, like many Turnaround CIOs, may be tempted (or asked) to leave for another company that sends out the “SOS” beacon. “The State of the CIO” data indicates this allure is sometimes too much for these CIOs to ignore: Turnaround CIOs had the shortest mean tenure (3.9 years) of all CIO types (overall average of 5 years).

“The one dynamic that we all find in this turnaround area is that there are a lot of companies that have those needs,”

Smith says. “They come looking for you. They want someone who’s been there and done it before.”

To avoid being pigeonholed, Churchill Downs’ Rollins says he’s consciously trying to move away from the Turnaround CIO archetype, to be seen more as an Innovator and Business Leader. He’s already finished the first two phases of his turnaround—planning and executing—and now he’s in the “solidifying business and IT processes” stage. His big job today is to improve the business-IT relationship.

YOUR BEST FIT

As the recruiter Lewis puts it, what companies seek in a Turnaround CIO is “someone who has the intestinal fortitude and political savvy to know how to cut and grow at the same time.” That’s no easy task.

Given the strengths of their skill sets and their save-the-day personalities, it’s not surprising to see where Turnaround CIOs will flourish—in organizations where they are free to rejuvenate their IT department as they see fit.

Whatever the challenges, the desire to make an immediate and long-lasting impact on an organization—no matter the career risks, technical obstacles or long hours—fuels the Turnaround CIO. “I joke with my CFO sometimes,” Rollins says, regarding whether he should have taken the job. “I tell him, ‘If I knew then what I know now....’” The joke, in a sense, is on him and his Turnaround brethren: Deep down, Rollins knows he would’ve taken the job anyway. **CIO**

Turnaround Tips

For six steps to righting a troubled IT ship and more on **TURNAROUND ISSUES**, go to www.cio.com/010107.

CIO.COM

You can reach Senior Writer Thomas Wailgum at twailgum@cio.com. To comment on this article, go to the online version at www.cio.com/state.



CIO EXECUTIVE VIEWPOINT

Looking Ahead to '07

CIOs need to focus on the data integration strategies that drive business alignment

Tony Young**Vice President and CIO, Informatica**

It's time for CIOs to look toward 2007. With all the opportunities, there will be challenges, too, the greatest of which, asserts Tony Young, CIO at Informatica, is business alignment. At the end of the day, alignment can only be achieved with strategic data integration. Read on for more on the subject.

In terms of data integration, what will be the biggest business challenge for enterprises in 2007?

At a strategic level, CIOs need to think about the business imperatives that ultimately drive alignment: improved decision making, modernization, cost reductions, compliance, M&A activity, profitability and outsourcing. As it happens, data integration is core to all of these imperatives, enabling such capabilities as analytics and a single view of the customer, as well as critical data management functions like consolidation, synchronization and migration. Data integration fuels these imperatives and becomes the foundation for how you grow your architecture and your enterprise over time.

What will be the biggest data challenge?

The greatest data challenge will be fragmentation. Historically, we've worked out of silos, with separate applications for supply chain, CRM, etc. We've hired our favorite SI who hand-coded these applications in multiple formats with expensive interfaces. All of this is compounded by massive data proliferation and business events like M&A activity, globalization and the influx of unstructured content. Going forward, CIOs need to build a data services layer into their enterprise architecture—something that has often been neglected—to support the synchronization of data across all applications.

no one can afford the propagation of bad data, quality is a strong component of our program. With all of this in place, we've been able to deliver an enterprise warehouse and customer hubs with sales portals. All of our applications are interconnected, and we leverage our integration layer to phase out acquired systems within three months. The economics show that we've saved 15 percent to 20 percent in our data migration efforts. I can attribute what we've accomplished to our commitment to data integration and the architecture that supports it.

What speed bumps do most companies hit along the way?

First, CIOs must be prepared to separate the urgent from the important: How do I make continued progress on important initiatives while hitting short-term goals? Second, we all need to recognize that building an architecture with a data services layer isn't a topic for the office of the CIO alone. Rather, it's an executive-level conversation. CIOs need to keep in mind that their technology supports what the company is trying to accomplish.

What advice would you offer to a CIO facing the same challenges?

I urge CIOs to focus on building that data services layer to ensure alignment with business objectives. When you build applications for any business process, interconnection



number that break through. CIOs who really want to break through and drive business value must have the right architecture in place.

In terms of data integration, what's your recommendation for CIOs?

When it comes to CIO priorities, items move around on the list, but there are a few constants: doing more with less, driving enterprise value and business alignment. Of course, there are trends that come and go—they aren't enduring. In 2007, CIOs need to focus on delivering data integration that will address those key, constant imperatives without getting tangled in the trappings of the newest technology. And they need to pay attention to quality. Most CIOs agree that data is owned by the business, not IT, so they need to establish solid programs around data quality and governance.

For More Information:

Check out this white paper, "Data Governance - Why It Matters to the Business" at www.cio.com/whitepapers/informatica

.....
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"In fact, data is really only relevant when it relates into all applications across the enterprise."

What solutions have helped you, and with what results?

At Informatica, we started with a well-defined enterprise architecture, which is very well articulated, so there are no rogue efforts going on. Specifically around the data fragmentation challenge, we took the time to define a data integration layer so that ubiquitous data flows in and out of our applications and analytics. And because

is crucial. Data into just one application is less interesting and much less important to the enterprise. In fact, data is really only relevant when it relates into all applications across the enterprise. I also advise CIOs to build an architecture that will last. Remember, this is how you're going to get to the ideal 50/50 run rate between daily support and new initiatives. Today, most enterprises run closer to 80/20, but there are a small

THE ROI OF Alignment

Sure, good alignment with the business is important, but does it translate into real dollars? Piles of them, according to "The State of the CIO" data.

BY ALLAN HOLMES

Simply put, if you match what you are doing in the IT department to the goals of your business—whether it be growth, building brand loyalty or entering new markets—you will, most assuredly, increase your chances for success as a CIO. Period.

How do we know? Because the results of this year's "State of the CIO" survey couldn't be more clear: Alignment brings the money.

CIOs who said they were aligned with the business reported that IT had enabled a new revenue stream more than twice as often as those CIOs who said they were not aligned (24 percent versus 11 percent). More important, more aligned CIOs said they had used IT to create a competitive advantage for the company than unaligned CIOs (38 percent versus 23 percent).

So how do you achieve this exalted state? Alignment is a skill that is less technical than it is social. How well an organization has aligned IT processes with the business strategy depends on "how well the CIO is communicating with C-level colleagues," says Laurie Orlov, vice president and director of research for Forrester Research. "They need to be able to fully communicate what IT is doing and why that is important to the business strategy."

But the sad fact is that few CIOs are aligned. Only one out of five CIOs said he is aligned with his business's strategic goals, according to "The State of the CIO 2007" survey. That's a big problem for the other four out of five CIOs, says Albert Segars, a technology management professor at the University of North Carolina's Kenan-Flagler Business School. If you're not aligned, "you're lost in space," he says.

BE ALL BUSINESS

Alignment is not easy to achieve, but there are some ways to increase the odds. For Bill Crowell, CIO of Oregon's Department of Human Services, it's being able to talk in business terms, which is much easier to do if you have experience in business. Crowell says his education and background are what have given him the understanding of, and empathy for, the pressures and demands facing business unit leaders. Crowell has an econom-

ics degree and an MBA from the University of Virginia. He learned the mind-set of CFOs when he worked for four years as CFO for a division of McGraw-Hill and as assistant deputy secretary of financial systems for the U.S. Treasury Department. This experience, and his ability to speak the language of his colleagues' business units, enabled Crowell to learn from his peers what resources they needed to meet their strategic goals and missions. "The business management group really didn't have a sense of where they were and where they needed to get to," he says. "They were looking for help, and I was able to provide some. I can't say how important that was for me to establish credibility."

A strong background in business is one characteristic that is common among CIOs who say they have aligned IT with an organization's strategic goals, Orlov says. According to "The State of the CIO" survey, aligned CIOs still were more likely to have held a position in IT prior to taking the CIO position compared with unaligned CIOs: 71 percent versus 66 percent, respectively. But the survey also shows that an aligned CIO is more likely to have held a position in a non-IT business operation than the unaligned CIOs (9 percent versus 3 percent, respectively). Although the percentages are quite small, Orlov and Segars say the rate could begin to climb. "You're starting to see more and more CIOs coming from business units or being asked to run business units in addition to being CIO," Orlov says.

MAKE INNOVATION A ROUTINE CIOs who are aligned frequently work within organizations that put a high value on innovation—indeed, nearly half of aligned CIOs said that their IT department is the source of innovative ideas, compared with 39 percent of unaligned CIOs, according to "The State of the CIO" survey.

Carolynn Chamoun, CIO at Telerx, a provider of customer support services for packaged goods companies and pharma-

A Bigger Return

If you're aligned...

...chances are, you report to the CEO, not the CFO

Aligned CIOs

40%

Report to CEO

20%

Report to CFO

Unaligned CIOs

33%

Report to CEO

32%

Report to CFO

...and make much more money

Aligned CIOs' average income

\$211,000

Unaligned CIOs' average income

\$162,000

...manage far fewer crises (percent of CIOs who said "managing crises" is among top five activities)

Aligned CIOs **16%**

Unaligned CIOs **39%**

...have many more innovative ideas adopted by the business (percent who said innovative ideas come from IT department)

Aligned CIOs **49%**

Unaligned CIOs **39%**

...and spend less time proving the value of IT

Aligned CIOs **21%**

Unaligned CIOs **37%**

Alignment Means Competitive Advantage

38%

of aligned CIOs created competitive advantage last year, versus **23%** of unaligned CIOs

45%

of aligned CIOs believe they will provide competitive advantage again next year, versus **30%** of unaligned CIOs

CIO RESEARCH

ceuticals, has taken the lead on innovation by having one of her direct reports hold monthly meetings with a giant packaged goods customer (she would not identify the company). Telerx also has annual meetings that include staff from Telerx's IT group as well as managers representing almost every business unit within Telerx. The Telerx team discusses with the client what problems and issues have arisen with, say, manufacturing or sales, what the industry trends and outlook are, and what Telerx can do better. At the end of the year, Telerx, with input from Chamoun, will make 12 recommendations that the client can follow to improve its business and product quality, which frequently involves IT playing a vital role to provide innovative solutions—such as enabling consumers to send digital pictures and videos of the products that they have problems with or questions about. “It helps a lot if innovation is made part of your routine,” Chamoun says.

FAILURE IS AN OPTION

Aligning your IT projects and processes with the business's strategies is a risky

undertaking. After all, it puts the IT department on the front lines of doing battle in the marketplace, where failure is common. That's why the aligned organization's top executives must create a supportive environment in which the CIO and other executives quickly recognize what isn't

working, learn from it and recover. That's what Steve Strout, VP and CIO at Morris Communications, a privately held publisher of small-to-midsize city magazines and newspapers, says is one of the aspects of his company's culture. For example, last year, when Strout tested a prototype CRM system, he found that the company's clients failed to use an option within the system that allowed them to set up their own websites—a feature that Strout hoped would help raise revenue.

Instead of simply killing the feature, Strout hosted a meeting to openly discuss the problem. Jointly, the IT and business teams came up with an alternative that allowed clients to preview their newspaper ads, and they began signing on. “You have to understand that people are going to make mistakes,” Strout says. “I know I can count on the CEO or CFO to always pitch in and

Filling in the **alignment gap** doesn't simply make CIOs more likely to keep their jobs (though it does), it also **gives them access** to more of the resources they need to stay aligned.

help me come up with alternatives when things aren't working. And they know they can get the same support from me.”

Working on personal relationships that go beyond business is a start to creating that atmosphere. Strout makes it a habit to schedule at least one weekly out-of-office meeting with an executive who has direct P&L responsibility for a unit. The meeting can be a breakfast, lunch, or after-hours drink or dinner, or a Saturday round of golf. During that time, Strout will ask his colleague how projects are going or what issues there may be. “This allows you an honest and less threatening way to discuss any issues before they become bigger issues,” Strout says. “You're looking for solutions, not trying to find blame.”

AVOID THE BLAME GAME

And when you get down to it, blame is what a lack of alignment is all about. It is resentment that a service paid for does not deliver more business. Filling in that gap doesn't simply make CIOs more likely to keep their jobs (though it does), it also gives them access to more of the resources they need—everything from more budget to more staff to a greater ability to focus on strategic IT (see “All That Data” on Page 85).

The proof is in the numbers: Alignment always pays. **CIO**

Getting Along

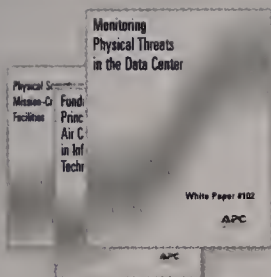
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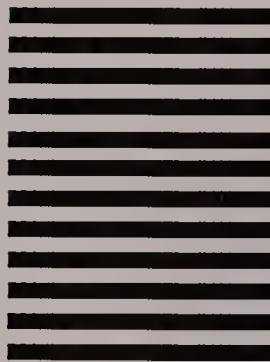
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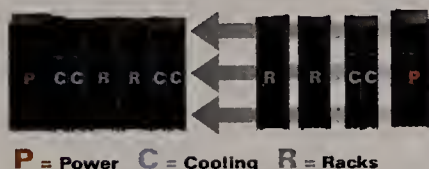
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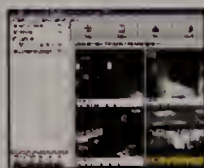
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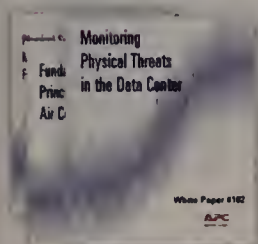
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How to Culture New Ideas

When companies look to innovate, more frequently than not it's the CIO who gets the call. Why? Because IT is the only function that touches every aspect of an organization—from the back office to the front-end customer-facing systems and technologies. The trend among organizations to place the responsibility for innovation on IT's shoulders is borne out



MIKE BOLTZ
CIO, Aviva

in CIO's 2007 "State of the CIO" research report (in this issue).

For 2007, respondents predict that their primary impact on the business will be "enabling innovation," which is up from number three on the IT impact list from the 2006 survey. However, only 10 percent of CIOs said that "bringing ideas for IT-enabled business innovation to the table"

is a dominant part of their role. Similarly, many CIO Executive Council members are eager to crack the innovation nut and are struggling with ways to institutionalize innovation. Members report that for IT-led innovation to occur consistently, they must advance a multipronged strategy that includes gaining support and tolerance for risk at the senior leadership level, cultivating a new attitude and culture among IT staff, building supportive organizational

structures, aligning and partnering with the business, and establishing formal innovation processes. In this Forum, we'll focus on cultivating a culture for innovation. Next time, we'll tackle those processes.

Build Teams and Let Them Play

To create and sustain a culture of innovation, there needs to be a sense among at least a subgroup of IT employees that driving innovation is one of their major responsibilities. Another hallmark of a culture that supports innovation is a designated space for experimentation, a sandbox, as it were.

Executive VP and CIO Mike Boltz of Aviva created a branded innovation team at insurance company AmerUS (acquired by Aviva Nov. 15) called the IT Garage. The 25-person group consists primarily of IT staff and includes representatives from all levels—developers to VPs—and one member from the business side. Boltz's IT Garage focuses on how to tap powerful innovations occurring outside the company, such as open-source computing and gaming technology.

Participation is voluntary, and team members devote 5 percent of their time to these efforts. They meet in person for about two hours every month, while subgroups working on specific ideas meet on an as-needed basis. Boltz also uses Microsoft's SharePoint portal product to support collaboration and knowledge

Continued on Page 108

[ONE :: LINER]

"If they follow the process and get buy-in with customers and approval by our innovation committee, **they are not penalized but recognized for taking a risk** when a research project does not achieve the expected outcome." —CLAUDIO ABREU, CIO, BAYER





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Culturing New Ideas

Continued from Page 106

sharing among the team. Though he won't disclose exactly what the Garage has developed, Boltz has obtained funding and has three proof-of-concept projects under way.

At Bowdoin College, a 1,700-student liberal arts school in Brunswick, Maine, CIO Mitch Davis created an academic innovation incubator aimed at improving the integration of academic research and teaching. Davis describes the incubator as a "social interaction and work-oriented space" attached to the school's library where IT staff, students and faculty can put their heads together and hatch innovative technology solutions (see "Inside an Incubator" below for more details). The incubator is open all year, and any student or faculty member is free to visit or use the facilities. "The only rule is that no one can talk about cost," says Davis.

Davis actively recruits faculty and students to visit the incubator and is all ears when it comes to people's ideas. "We treat each individual as if he or she were a business and give serious consideration to how their ideas can benefit the rest of the college," Davis says. The goal is to show enough potential to attract grant money for the innovative ideas. One project hatched in the incubator is a Web-based Flash interface for viewing and understanding a digitized collection of rarely seen ancient Mongol scrolls. The incubator team used high-resolution scanning technology to digitally render the scrolls and then built a Web inter-

face for viewing them. The site is one of the college's most heavily trafficked and has garnered a great deal of attention in academia.

Not Just Order Takers

It's arguable whether the IT-as-a-service model is compatible with innovation, but some Council CIOs feel they need to divorce their staff from the old "stimulus response" model of IT fulfillment—a.k.a. "IT as order takers." CIOs constantly remind their people to think of the business as partners, not customers.

Hugh Scott, vice president of IS at Direct Energy, encourages this attitude by empowering his staff to "stop the line" when necessary, as assembly line workers are often empowered to do. "If they see something wrong in a business process, or if business partners don't show up for meetings, they can escalate the issue," he says. "And I always tell them, 'Don't just do it because you're being told to do it.'"

Boltz agrees that it's important to "make sure IT staff are positioned as 'thought partners' and not 'order takers.'" He appointed IT-business relationship managers who, rather than responding to business requests, reach out to business unit heads to discuss how IT can be used to drive their strategy.

More on how process can make or break innovation in the next Forum. **CIO**

Bill Golden is a San Francisco-based senior program manager for the CIO Executive Council. To comment on this article, go to the online version at www.cio.com/010107.

Inside an Incubator

Where innovative ideas grow big and strong

We asked Mitch Davis, CIO at Bowdoin College, how he designed and equipped his innovation incubator space. His reply: "You have to create a space that's welcoming, where people can walk in and not feel like they're intruding. It's designed as a large central space with offices attached to it, including mine. We have comfortable couches and modern, collapsible

furniture. One piece in particular is a wooden table that opens up in the middle and expands from a four-person to an eight-person table. We've also mounted pictures on the walls that showcase successful projects we've completed and awards we've won.

"We have whiteboards, of course, and five desktop computers available, both Macs and PCs. Any



MITCH DAVIS
CIO, Bowdoin College

equipment the college has acquired over the years is available through the incubator—cameras, laptops, high-end video production equipment, a portable sound studio, wireless transmitters. And when there's a project that I think

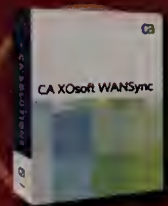
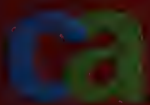
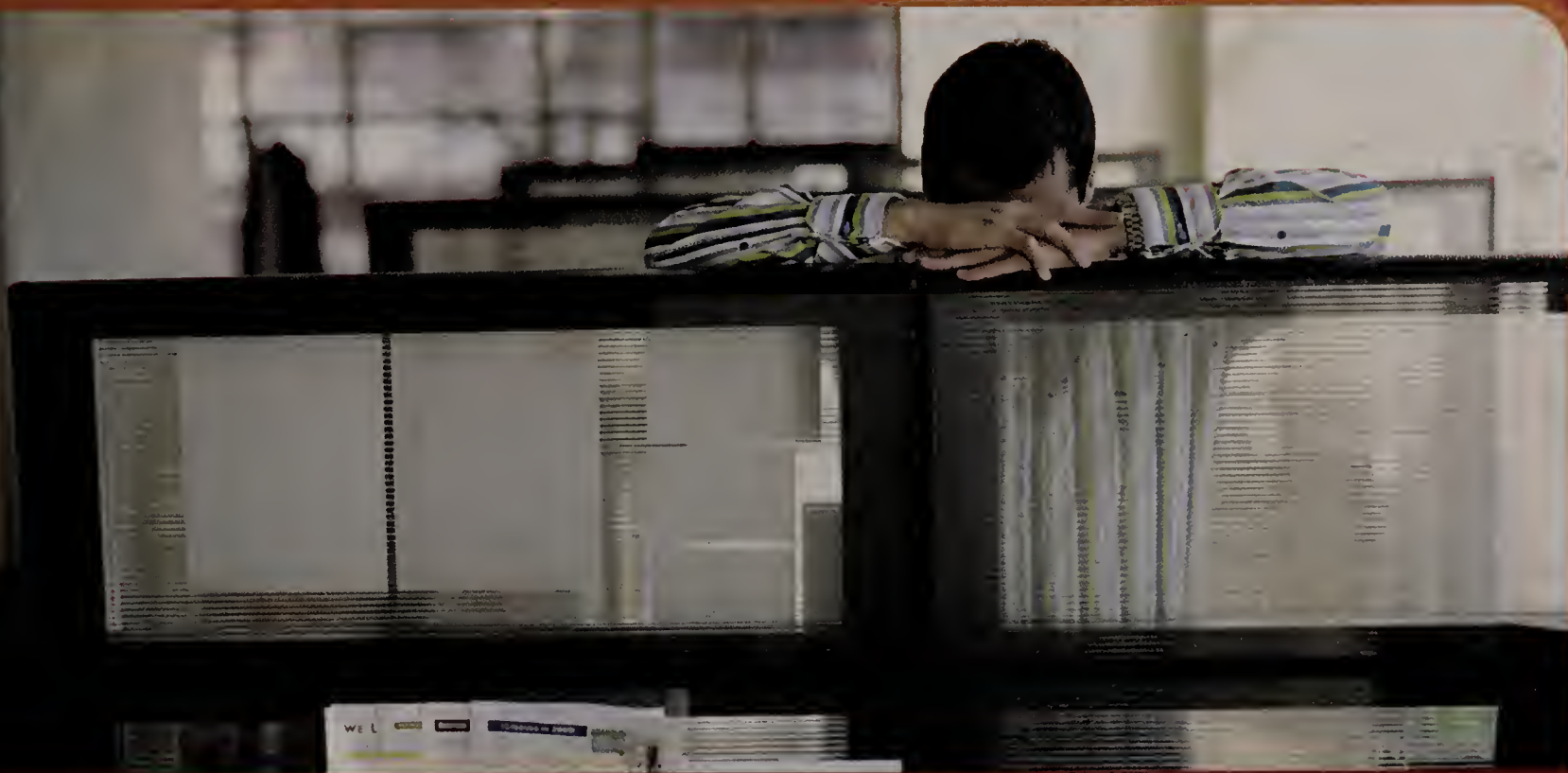
is worth investment, I have a budget to use to build a custom software or hardware system. I've even involved our machine shop to create mounts for hardware.

"You need to have staff in the incubator so that if someone needs something, there's someone there to help. I have an open-door policy should anyone need or want to speak with me."

—B.G.

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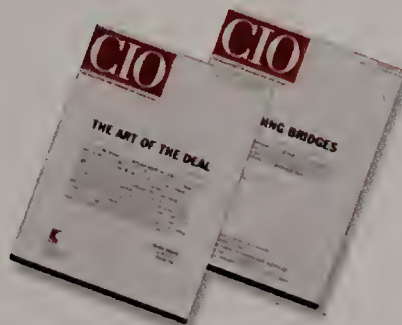
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CIO Self-Assessment Tool

What kind of CIO are you? A Business Leader? Innovation Agent? Turnaround Artist? Operational Expert? Add up your score to find out. (Your archetype is on the bottom of this page.)



1. To whom do you report?

- A. CEO (3) points
- B. COO (3) points
- C. CFO (4) points
- D. Other (0) points

2. Are you a member of the business executive management committee?

- A. Yes (6)
- B. No (4)

3. Have you held positions outside of IT?

- A. Business operations/administration (3)
- B. Marketing/sales (2)
- C. Consulting (4)
- D. Other (0)

4. What range best represents your total annual compensation?

- A. \$200,001 or more (3)
- B. \$165,001 to \$200,000 (1)
- C. \$140,001 to \$165,000 (2)
- D. \$140,000 or less (4)

5. Which skill is MOST important in your role?

- A. Strategic planning and thinking (2)
- B. Ability to influence change in others (3)
- C. Negotiation skills (4)
- D. Understanding business processes and operations (1)

6. Which skill is LEAST important in your role?

- A. Negotiation skills (2)
- B. Strategic planning and thinking (4)
- C. Understanding industry trends and business strategy (1)
- D. Thorough knowledge of technology options (3)

7. On what activity do you spend the MOST amount of time?

- A. Interacting with your company's CXOs and business executives (1)
- B. Making strategic systems decisions (2)
- C. Managing IT crises (4)
- D. Strategic business planning (3)

8. On what activity do you spend the LEAST amount of time?

- A. Budgeting (2)
- B. Learning about technologies (1)
- C. Strategic business planning (4)
- D. Leading projects (3)

9. Which business process are you currently improving with IT?

- A. Customer service/support (2)
- B. Order fulfillment/manufacturing (4)
- C. Research and development/product development (3)
- D. Accounting and finance (1)
- E. Other (0)

10. What is your HIGHEST management priority for the year ahead?

- A. Controlling IT costs (1)
- B. Revenue-generating services and products (2)
- C. Data privacy (3)
- D. IT staff development (4)

11. What is your LOWEST management priority for the year ahead?

- A. Internal IT knowledge management (3)
- B. Revenue-generating services and products (4)
- C. Controlling IT costs (2)
- D. Data privacy (1)

12. What is the biggest barrier to your effectiveness today?

- A. Unknown/unrealistic expectations from the business (2)
- B. Difficulty proving the value of IT (4)
- C. Lack of business sponsorship for IT projects (3)
- D. Shortage of time for strategic planning (1)

SCORE If you scored between **12** and **20**, you are most likely a **Business Leader** * **21 to 30**, an **Innovation Agent** * **31 to 40**, a **Turnaround Artist** * higher than **41**, an **Operational Expert**. (Less than 12, the chance that you're any kind of CIO is remote.)

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